



The Australian
Commodore
and Amiga Review

ANNUAL 1991



**SOFTWARE &
HARDWARE GUIDE**

**Word Processing
Desktop Video
Hints & Tips
Workbench 2.0
Animation
Printers
Hard Drives
Graphics
Fish Disks 200-400
User Groups
Spreadsheets
Databases
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Multimedia
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AMIGA ANNUAL

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Fish Disks are a fast, inexpensive way to collect interesting and useful software. Fish Disk Collection 200 - 400

Australian Commodore Review:

21 Darley Road Randwick, NSW 2031

Phone: (02) 398 5111

Published by:

Saturday Magazine Pty Ltd.

Distribution: NETWORK Distribution

Printed by: Ian Liddell Pty Ltd

**AMIGA
ANNUAL**

1 9 9 1

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P r e f a c e

ARE YOU GETTING THE MOST OUT OF YOUR AMIGA?

In this year's Amiga Annual, our fourth, we've returned to the format of our very first Annual in 1988. In this publication you'll find articles on major products recently released, or about to be released. There's also a topic by topic guide to Amiga computing, with glossaries and brief product guides.

In these articles we attempt to explain the subject from a beginner's point of view, providing an introduction to the concepts and a guide to buying products to carry out a particular task.

The information has been compiled from articles previously published in our two magazines *Australian Commodore and Amiga Review* and *Professional Amiga User*. It was then updated, and new material added to cover new subject areas and new products. There wasn't room to cover every area. If you would like to see more articles on a particular subject, drop us a line to the address on the contents page.

We have also updated our Software/Hardware Guide, listing all products available through Australian distributors, along with a brief description of the product and, in some instances, brief review comments. This is ideal for locating products which may not be available at your local dealer.

Toward the back of the Annual is a list of public domain disks compiled by Fred Fish numbering from 200 to 400. The list keeps growing every day.

There's also a list of user groups and some helpful tips on using programs in general and caring for your Amiga.

The Amiga is the most popular home computer in Australia and in many other countries around the world. New games, productivity and graphics software are arriving all the time. Many new hardware add-ons are also being produced, enabling you to add more memory, disk storage, capture graphics or sound or see more colours on your screen.

Many Australian distributors, suppliers and retailers handle these products. If you normally only visit a large chain store, why not check out the shelves at one of the specialist shops? You'll see they have a lot more to offer and can provide the right sort of service and support you're after.

In 1991, there are some exciting developments planned for the Amiga. It is fast becoming to desktop video and animation what the Apple Macintosh is to desktop publishing. Professional people are starting to use the Amiga more. Educationalists are turning to the Amiga for its superior graphics and low cost authoring systems. If you're doing something unusual with your Amiga, write to us - I'm sure many readers of our monthly magazines would like to hear from you too! □

Andrew Farrell
Editor in chief
A.C.A.R. & Pro Amiga User

AMIGA EXCITEMENT!

At this time last year, I can recall saying that the Amiga was set for an exciting year.

Exciting? I still can't believe all that has happened in just 12 months.

For a start, the Amiga was "star" of two major shows - the SMPTE "Sound and Vision" show where professional film and video equipment was shown from all over the world, and then the "World Conference on Computers in Education" show. Here the Amiga was able to convince even the most die-hard sceptics that it really was the perfect choice for education.

And speaking of education, we also saw the release of the new Amiga 3000, and then the Amiga 3000 with Unix, a low cost Unix solution specifically aimed at universities and higher education.

This, in a year when the Amiga was already breaking sales records all around the world including, of course, Australia and New Zealand.

Commodore are delighted to be associated with many exciting new ventures in computing. Many of these are in the educational field - the NSW Technology High School project, the Visual Arts courses at Morley High in WA, the South Australian Angle Park computing centre, and much much more.

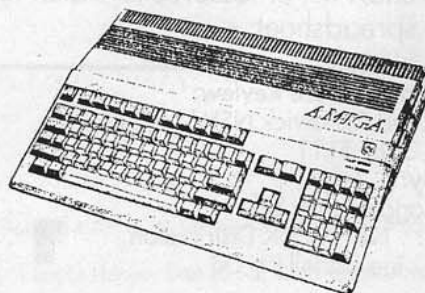
This involvement from Commodore demonstrates our faith in the future of the Amiga, if that faith ever needed proving. More and more, the Amiga is becoming the machine "of choice" in professional and semi-professional markets.

Let's face it. Virtually any computer can handle word processing, spreadsheets and databases. It's only when you get to a machine like the Amiga that you suddenly break out into desktop video, almost unlimited graphics power and now the latest computer application, multimedia.

Lately, I've been reading how other platforms plan to release new models to try to capture some of this market. The Amiga is already there, purpose-designed and ready to go.

Why would anyone wait for something else? □

Pat Byrne
Managing Director
Commodore Business Machines



Top of the Line Amiga3000



TIM STRACHAN, EDITOR AND PUBLISHER OF MEGADISC AND ONE OF THE FIRST AMIGA 3000 OWNERS IN AUSTRALIA, JOINED FORCES WITH CHRIS RALPH AND TONY DAY TO COMPILE THIS IN-DEPTH LOOK AT THE NEW AMIGA 3000

Dos Reference, Editors;

AREXX - A full manual for ARExx - essentially the original ARExx manual Appendices, Trouble-Shooting, Printer Drivers,

BACKING UP YOUR HARD DISK WITH BRU.

In short, pretty complete, well-organised, and a lot to read through.

There are many screen-shots throughout the explanatory parts (some of which will have to be updated, as they show previous Workbench versions), and the entire publication is generously laid out.

Tony Day tells

me that his A3000 came with a re-packaged A2000 Basic manual, about as useful as a dead dingo, especially as at the moment Basic falls over seriously on both 1.3 and 2.0.

The A3000 (and other Amigas with hard disks) will be released with *Amiga-Vision*, Commodore's new authoring system.

Getting up and running

The machine as I got it (remember this is the way it's set up for developers and won't be precisely the way the final setup is) was up and running as soon as I plugged it in. It came with a 40-meg 3.5" Quantum hard disk, and one internal 3.5" floppy drive, and the 2 meg of ram mentioned above. I had got the 1950 monitor earlier and it hooked up with no problems.

Turning the machine on automatically takes you into Workbench 2.0 mode (it loads Kickstart 2 from the hard disk, and briefly puts up a screen saying it's doing so). If you hold down both mouse buttons immediately after a cold boot (from power-up), you are presented with a screen which gives you a choice of booting up into Kickstart 1.3 or 2.0. Of course, once you're in a particular Kickstart/Workbench you can't get out of it without powering down and starting again.

Tony Day found another interesting screen - if you warm boot within WB2.0 keeping both buttons down you'll be presented with a screen which allows you to shut down current devices (hard

Sources of information include the Amiga 3000 manuals, downloads from overseas bulletin boards, Commodore technical support at Westchester and help from local Commodore staff - not to mention a good deal of hands-on testing and evaluation.

Avoiding the techno-speak for the moment, in essence, the A3000 is terrific! It looks and acts like a well-designed, advanced, 90's piece of hardware.

A lot of care has gone into the look and feel of both the machine and software - and that care is going to pay off in the end. It is fast, has a small footprint (takes up little space on the desk), and loves any addition of peripherals.

The A3000 is the first major leap in Amiga technology since the introduction of the A1000, and it will take a fair bit of souping-up to bring other Amigas up to its speed.

There are a few caveats, however, as detailed later. It is not yet what the Amiga could be. There will be some people who will want to soup up their current machine or wait for the larger A3500, which is in the wings.

Documentation

The manuals which come with the machine are professionally produced. Moving from smallest to largest, there is a "Quick Connect" double A-3 size fold-out, which covers all the basics of getting up and running, along with the necessary warnings, pictures, labelled diagrams and so on. It does the job well.

Introducing the Commodore Amiga 3000 is a soft-cover book, half of which is devoted to overview, features, getting started, and expanding.

There are many line drawings which make things pretty clear, and it moves from simple definitions up to deep techno stuff, especially in the second half of the book which is taken up with Appendices - specifications, plug pin assignments, the display enhancer, the keyboard and the A3000's schematics (which, for the technically minded crystal-ball gazer will reveal much of what is coming in the future). Again, it does the job pretty well, and explains the hardware.

Using the System Software - a big three-ring plastic-coated binder, complete with internal plastic pockets, place markers and system disk-holders. All the paper contents of this binder came shrink-wrapped as did the labelled cardboard section separators. A few minutes of assembly and the manual is there, thick and deep, and pretty complete. The introduction to this goes through what you've got, how to access it and the like, and the contents pages are exhaustive.

The four main divisions and their sub-divisions are:

WORKBENCH 2.0 - Tutorial, Basic Operations, Preferences, The Workbench Programs, The Extras Programs, Using a Hard Disk;

AMIGADOS - Using AmigaDos, Amiga-

disks, floppies, etc.) and reboot from external devices, such as a 5.25" disk drive. It seems likely that the A3000 will be released with this kind of setup, in case some programs which have been written without following Commodore's programming guidelines start falling over with Workbench 2.0.

Enhanced display

With a multisync monitor, such as the NEC or the 1950 (Commodore's own) you get a bunch of different video display modes, most of which are flicker-free at high resolutions. This is a deinterlacing/scan doubling capability, which takes interlaced high-resolution screens and outputs them without flicker to a 31.5-kHz VGA monitor.

It also eliminates the black scan lines between rows of pixels on both low- and high-resolution displays. This is effectively what Microway's FlickerFixer does, except that it's built into the hardware (thus freeing a slot) and doesn't have the drawback of reduced number of horizontal scans. The VDE can be finely adjusted from the back with a small screwdriver, something I had to do when I first got the 1950 monitor, as there was some jitter and "shimmer" on the edges of screen objects.

There is a bypass switch on the back of the computer so you can disable it if you have a multisync monitor. A couple of the video display modes cannot be deinterlaced - to deinterlace the superhires (1280) modes would require twice as much memory for the deinterlacer circuit as has been put on the motherboard. That would be expensive.

So the SuperHires Interlaced (NTSC/PAL) and the Productivity Interlaced modes can't be deinterlaced by the VDE. The VDE switches to bypass mode when it detects Productivity mode, and samples the superhires screen (alternate pixels will be missing). It should be disabled (flip switch) when using superhires. All other PAL and NTSC modes are deinterlaced, regardless of depth or overscanning.

Full screen overscan

It took a bit of playing around with Preferences on both WB1.3 and WB2 before I managed to get a full overscan (704 x 580 pixels) covering the entire screen of the 1950 monitor - I haven't heard of any other multisync monitors being able to do this, so keep it in mind when you're thinking about monitors. Nic Wilson, who apart from being a gen-

eral Amiga wizard is a TV technician, seemed to think this was pretty unusual. It seems that the NEC 4D has a wide range of controls, and programmable slots so that you can remember a whole bunch of settings, and it may do the same, but it costs about \$2500.

Speaking of monitors - you can still use the RGB port to run a 1084-style monitor (at the same time as the multisync if you like) and if you're really keen you can add on an A2024 monitor for that DTP and CAD work.

The Enhanced Chip Set

The enhanced Denise chip can output up to 1280 horizontal pixels in four colours, and it sports a new 640 by 480 pixel-resolution productivity mode. Unlike other high-resolution modes on the Amiga, the productivity mode is not interlaced, and it is limited to four colours.

Being programmable, Denise lets you mix different horizontal and vertical resolutions and provides the overscanning necessary for video applications.

The new Agnus chip doubles the amount of accessible chip RAM to 2 megabytes. The only chip not upgraded is Paula, which provides the Amiga's four-voice sound.

The custom chips, the Agnus/Denise/Paula, are still clocked with one or both of the 7.16MHz clocks, as in an ECS 2000. The chip memory is 32 bit wide, but only the CPU can take advantage of that.

Looking at the motherboard

The motherboard is compactly designed, which has its pros and cons - to have a look at the entire board requires removing the hard and floppy drives and upper plane and drive platform and this in turn required some fiddling to remove the back plates. As Chris pointed out, there were two kludges - a line has been soldered in from the maths chip to the buffer and a resistor had been slipped in as an afterthought too. Otherwise pretty neat.

According to the schematics, the A3000 was designed in West Chester, US, not Germany where I think the A2000 was designed. The Schematics also have references to the A3500, presumably a "tower" design with more slots and ports and other gizmos.

Expansion

Zorro III expansion slots are one of

MICROPROCESSOR

Motorola 68030 16MHz with 68881 FPU or 25MHz with 68882 FPU

Enhanced Chip Set

Real Time Clock

32 bit Access to Fast ram

32 bit Access to Chip ram

MEMORY

32 bit Fast RAM support - custom controller handles static column mode Drams and CPU burst access.

1 Megabyte CHIP RAM expandable to 2Mb on board

1 Megabyte FAST RAM expandable to 18Mb on board

STORAGE

32 bit DMA based on-board SCSI controller

40 Megabyte Quantum SCSI Hard Drive

DISPLAY

Built-In Display Enhancer

CABINET

Low profile case supporting total of 3 internal 3.5 inch drives (two accessible externally)/small footprint.

Front mounted power switch

MODEL NUMBERS

Commodore Amiga 3000-25-40 (25MHz with 40Mb HD) \$6119

Commodore Amiga 3000-25-100 (25MHz with 100Mb HD) \$7199

EXPANSION

4 Zorro III expansion slots each downwardly compatible with Zorro-II cards

1 100pin only slot

2 100pin slots w AT style extensions

1 100 pin inline w A2000 style video slot

1 CPU expansion connector "fast slot"

200 pins with processor takeover capability (68040 board)

EXTERNAL CONNECTORS

23 pin Amiga Video

15 pin VGA

External SCSI

External floppy

serial

parallel

audio

keyboard

joysticks

the major new features of the A3000. With the exception of the graphics system, which uses a 16-bit bus and an NTSC-compatible 7.14-MHz clock, all the internal pathways in the Amiga 3000 are 32 bits wide and use the processor's clock. The external I/O (Input/Output) bus is capable of 32-bit transfers without losing compatibility with 16-bit peripheral cards, good news for current owners of such cards.

The I/O bus, called ZORRO III, multiplexes the address and data lines for I/O cards capable of 32-bit transfers, while treating 16-bit Zorro 2 cards normally. There are four 100-pin expansion slots and all are Zorro III - two are bridge slots, and one is shared with the video slot. They are located on the daughterboard, which is perpendicular to the motherboard.

Two of the 100-pin slots also have PC/AT slots in line with them. The "form factor" of the slots (ie how big a card they can take) is the same as for the A2000, meaning that a PC/AT Bridge-board can be fitted.

The video slot is the topmost slot and allows for cards that are a bit fatter than a Zorro card. However, any card that used all the space in the A2000, rather than the dimensions specified, will not fit. The A3000 is a slimmer beast than the A2000.

There is also a 32-bit Fast slot on the motherboard for future expansion such as a 68040 microprocessor and other "high performance options". I added ASDG's Dual-Serial Board because I need to link the A3000 up to a modem and a Postscript printer, and I was playing around with Wayne Frew's version of DNet (for public domain networking). It slotted in perfectly in the lowest slot (the slots are horizontal on the A3000) and was up and running immediately.

I'm told that any expansion device that has been designed according to Commodore's specifications will work fine on the A3000. I've used a Maestro 2400 ZXR modem, dot-matrix printer, 5.25" disk drive, 3.5" disk drive, joystick, 1081 monitor, Postscript printer, etc. on the A3000 with nary a glitch, so there's no problem of it handling existing peripherals.

Adding Ram

The standard machine also comes with 1 Meg of Chip ram and 1 meg of Fast Ram installed in the form of DIP (dual in-line) chips. To expand the sys-

OTHER CUSTOM CHIPS

BUSTER - (Expansion Bus Controller and Bus Arbiter) Takes 68030 signals and converts them to Zorro II or Zorro III signals, as appropriate, for CPU access to expansion bus. Going the other way, it converts bus signals into 68030 signals during DMA. It's also responsible for bus arbitration of CPU slot, SCSI, Zorro II and Zorro III expansion slots.

GARY - Local bus controller

RAMSEY - DRAM controller and SCSI address generator.

DMAC-SCSI DMA data path chip.

AMBER - Scan doubler/converter, similar to what flickerFixer does.

tem (which I'd recommend you do immediately, as the computer is memory-hungry especially in its current configuration requiring the loading of Kickstart into ram), I suggest pulling out the fast ram DIPs and slotting them into the available bank of chip ram sockets.

Then go out and buy ZIPs of 100ns speed or better (which have been used because they take up less space, since they're slimmer and "angled") and whack them into fast ram bank, one meg at a time. Thirty two in total will give you 4 meg of fast ram.

The A3000 is the first major leap in Amiga technology since the introduction of the A1000, and it will take a fair bit of souping-up to bring other Amigas up to its speed.

If you get static column memory (SCRAM) chips, you'll go faster than with the more common page mode memory, because RAMSEY (see above) will detect its presence and enable "burst" mode on the 68030, thus greatly reducing the time needed to access Fast Ram. If you use SCRAM chips, they should be 80 ns type or faster.

NOTE - You could buy the new 1 megabit ZIP chips (2 per 1 meg of Ram) and build up 16 meg of fast ram on the motherboard. When I enquired about this it

seemed that the cost loading for getting 4 meg of these was about 40% on the cost of the lesser chips, and since I didn't need 16 meg (yet! - I'm sure the time will come sooner than I imagine), I went the cheaper route. You can't mix and match these two kinds of chips, it's one or the other. The next release of the manual will have all this fully explained.

Adding a hard drive

The SCSI controller is on the motherboard and uses much of the same technology as the 2091. The driver is written for the A3000, and there may be some 32-bit enhancements. I added an 83-meg Seagate SCSI drive in the other 3.5" slot which could also take a second floppy, if required. There were no hitches apart from the fact that I was missing the single-screw plate which is a good new design feature of the A3000.

A phone call to Commodore secured me one immediately, and I found that the holes in the plate to attach the drive were set up for floppy drives, and didn't quite coincide with the holes in the hard disk. So a drill was required - but I've told Commodore about this and they say they'll fix the problem in future. The drive slotted in and fired up and it was straightforward to use the *HDTToolBox* software supplied to prep, format and configure it.

The *Introducing the A3000* book takes you through the whole procedure of installing add-ons, and it's pretty complete. As an aside - be careful with Seagate hard disks. There are still some on the market which seem to have very long self-diagnostic startup routines, so long in fact that by the time the Amiga wants to talk to it, it's still not ready, and you end up warm-booting a few times to get it going. Seagate has since changed the necessary ROMs, so be careful about old stock, I guess.

Building your own A3000?

With an ECS chipset, A2630, A2091, and FlickerFixer, you can almost get to where the A3000 starts out, minus the 32 bit chip ram and 32 bit DMA. Also, A2630 memory is only as fast as the slowest A3000 memory. There is no way to add 32-bit chip Ram, the Zorro III slots, or the new "fast" slot. Or not yet anyway.

Use of Nic Wilson's upgraded "SysInfo" program on both the A3000 and an

A2500 fitted with a GVP 3001 68030 card indicated that internally the A3000 was much faster - this was determined by first running NoFastMem to turn off all Fast memory and then noting the relative speeds.

The 2500 system was slowed down to about 80% of the speed of a standard Amiga B2000 while the A3000 was still running double the speed of the standard machine. This indicates that when you've got a situation of not much fast memory left, and/or a lot of floppy disk access and/or any case of increased access of Chip ram, the A3000 will show its speed.

In short, the A3000 is smaller, faster, has more memory on the motherboard, more built-in options, less need for expansion cards, more chip memory. On the other hand, it is less expandable. If you put in a bridgeboard, one PC expansion card and something in the video slot (genlock), then you only have one slot left. A2630 card users have ROMs on the card, but these are not compatible with the ROMs on the A3000 - rather, they are for the menu that allows you to switch between 68000 and 68030 mode (plus the Amix button). They are 32Kbyte roms (approx.).

Criticisms

The 68030 and 68881/2 are not Pin Grid Arrays (PGAs, or socketed) but rather surface mount, which means that they are soldered in directly. The oscillator is also soldered in. So replacing these chips with faster ones is almost impossible.

In Australia, this shouldn't affect us immediately since we'll all have the faster set-up, but what if we can get our hands on faster chips? Presumably the logical upgrade from the 25-meg A3000 setup will be a 68040 card plonked into slot waiting on the motherboard.

On the schematics, however, the possibility of both surface mounted and PGA setups are described, so it seems that Commodore has designed for all eventualities.

There are no 5.25" SLOTS. Once again, no room, but only of interest to BridgeBoard users, I'd say, and to use the A3000 for IBM work seems to be missing the point these days. Only SCSI drives are supported - there's no provision for less expensive ST-506 drives.

The A3000's not cheap - although that depends on your point of view and reason for buying. It is certainly better

value by far than any alternative with similar capabilities, but at a retail price of around \$7000 including tax for the base machine described above, you're talking real money. You'll then need about \$830 for the 1950 monitor, \$500 for another 4 meg of ram, and so it goes. You'll need a good reason to buy one of these.

Is it really faster?

When I got the A3000, I had an A2500 standard issue on my desk, so the desk was groaning for a while under the weight of two mean machines. Perfect time to do a few comparisons so I fired up SuperBase Pro with my database of about 3600 names and had both machines "fast forward" through the entire file. The upshot was: it took the A2500 7 min 25 sec to get through it all; for the A3000, 8 min 8 sec. Yes, surprise!

This was basically a measure of speed of data retrieval from a hard disk, and there seems to be no explanation, even from Commodore. Anyone got any ideas?

According to Nic Wilson's SysInfo program (MD17), the A3000 should be 1.76 x the speed of the A2500 and I'm sure it is, internally. But not getting data off the hard disk.

Conclusions

As someone has said: "The A3000 is not the Amiga that enthusiasts have really been waiting for, the one that the old 'Ranger' stories spoke of, the one with greater than eight bit pixels, with 24 bit colour and 1280 X 1024 resolution and 32 bit 28MHz chip RAM bus and CMOS custom chips.

"I know Commodore (or at least, Commodore's engineers) want to make a machine like this. So I say: let the A4000 rumours commence!"

I could agree with this - the A3000 as it stands is the current Amiga architecture taken to the limit. That is a pretty high limit, and will be raised with third party developments like the "Colour-Burst" hardware, but the next Amiga should incorporate all of the features quoted above, and more.

In particular, it must have native 8 and 24-bit colour to remain competitive in the fast developing world of "multimedia". Capabilities such as extra half-bright, dynamic high-resolution, and hold-and-modify let you increase the number of colours on screen (up to 4096 in the case of HAM), but they either force you to swap palettes on the fly, a

serious drain on system bandwidth, or don't let you define each pixel independently. Meanwhile, however, it'll do to be going on with, eh?

What about unix?

According to Commodore: The release of Amiga Unix is not tied to the release of the 3000 or to the release of AmigaDOS 2.0.

They're working on HD floppies, which are required by UNIX. There are several options for adding these to the system, each of which involves "cleverness" rather than "new Paula".

The 68030 contains an on-board MMU (memory management unit; necessary for running UNIX). The A2620 68020 card comes with a separate 68851 MMU since that functionality is not in the '020. The A2630 68030 card also has full MMU abilities, again in the CPU.

According to info from an overseas download, AMIX has had its first customer and it was a large purchase. The product must be shipping by a certain date to meet Commodore's first customer's contract. I've seen the Unix running at Commodore on a 2000HD, and it looks good - typical Unix flavour.

However, moving into the world of marketing Unix work-stations is going to be difficult for a company which, to put it mildly, has its expertise well and truly in other areas, such as home computers. It will be interesting to see how Commodore tackles this.

Meanwhile, the Amiga 3000 represents a great effort by Commodore to bring the Amiga up to date, and they should be encouraged to continue this trend to create the final, indisputable, computer of the century. □



- ☞ AMIGA 3000 (We love 'em, also on display)
- ☞ AMIGA 2500 (Great when in season)
- ☞ AMIGA 2000 (Now in Professional Pack)
- ☞ AMIGA 500 STARTER KITS (Good entrée)
- ☞ AMIGA DESKTOP VIDEO (We cater for everyone
from the home user to the professional)

☆ ☆

We also try to service the country people, some who may never get to see the inside of our shop. (Cruel, isn't it.)

☆ ☆

AMIGA SPECIALISTS

COOL AT THE HARD DISK CAFE

WORKBENCH

Although not yet released at the time of writing, Workbench 2.0 should be available early 1991.

It offers a smarter, more powerful interface for launching applications and organising your resources. From the three dimensional relief windows, to the array of classic fonts, background patterns and enhanced menu options - what could have been called version 1.4 has demanded more - Commodore marketing have decided this is definitely version 2.0.

Workbench is the interface between you and your application software, files and documents, tools and projects. From Workbench you launch programs, carry out house-keeping functions and organise yourself and your work.

So, the very look and feel of this interface is of utmost importance. You have to deal with it the very first time you switch on your machine - which for many of us is every day. No doubt, the old blue and white colours and chunky icons of Workbench 1.3 sent you clicking directly to preferences, and on to a more tasteful set of colour slider settings. However, there was little you could do about the rest of the show.

Some of your drawers are probably looking pretty full. Have you snap-shot

all those icons into a neat and tidy order lately? Probably not - the idea of shift-clicking on several dozen projects does not enthuse even the most avid user.

For you people, Workbench 2.0 is a

Files can be viewed in windows by name, icon, size or date. Workbench 2.0 can show only those with icons, or all files contained in a drawer or on a disk - making temporary icons for those without. You can drag these makeshift icons from drawer to drawer, rename, view, duplicate or delete them - all of which you could not previously do directly from Workbench.

A new drawer can be created from a Workbench menu in a flash - you don't need to wait for a copy of the empty drawer to appear.

Icons and windows are rendered very differently, and the gadgets and slider look completely different. The front to back gadget is now just a bring to front gadget. When the window is at the front already, the same gadget makes the window disappear - remembering its contents. Next time you open the same

window during the current Workbench session, it will appear instantly, without reference to disk. This feature is ideal for hard drive users.

Another gadget just to the left will do the same thing, but the window simply shrinks down to the smallest possible size, and remains visible on the Workbench. Some tools such as the calculator can also be shrunk.

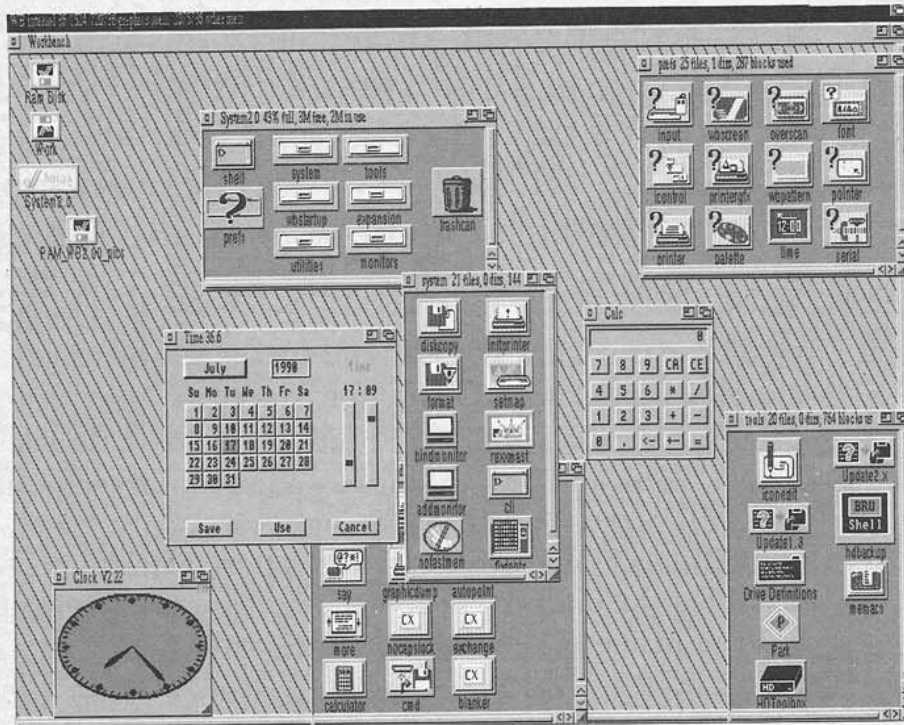
New fonts and new menus

The Workbench pull-down menus have been seriously revamped. The fonts

in these menus, below icons and in the CLI can all be separately defined, giving you the option to escape from the clutches of eight-point Topaz forever. Try Helvetica and Times for a smarter, more readable look.

The colours, and background colour for icon names, may be custom-defined, as can a pattern for all windows or the workbench.

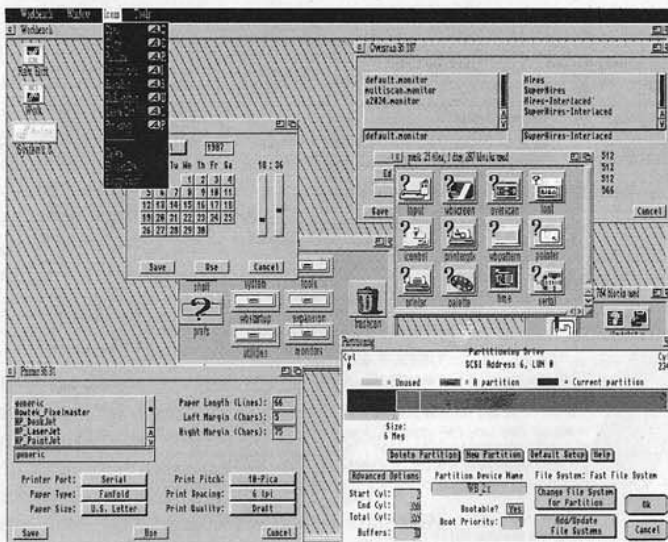
Some existing applications will have difficulty dealing with all these new fonts, of different sizes and proportions,



fresh breeze. Workbench 2.0 has a neater, tidier appearance, a more serious approach, a more pleasant array of definable variations, creating a whole new look and feel.

Trash your shell!

No more is there any need to revert to the Shell or CLI for tricky adjustments, file copying or setting up hard drives. No more will you run Diskmaster every time you power up. Workbench 2.0 provides low-level power too.



appearing in menus. Whilst the menus may continue to function, a few we tried became cluttered and difficult to operate. It appears many programs have made no allowance for fonts any size apart from our old friend, eight point Topaz. No doubt, developers will have to make some quick upgrades to popular products to ensure full compatibility.

New documentation

Commodore have turned over a new forest. The manual to Workbench 2.0 is brilliant. It looks like real documentation, and it is easy to follow. The five centimetre thick three ring binder contains a guide to all the new features in

Workbench along with a full explanation of using AmigaDOS, AREXX and the various Extras on Workbench. An impressive document, which is thoroughly indexed and referenced.

There are plenty of screen examples, and explanations for exceptions to the rule - such as hard drive users. It's a real shame they didn't desktop publish the document on the Amiga - some

of the screen-shots have an arrow pointing to a particular feature which was very obviously stripped into the final art.

Improvements and installation

There was no specific information on what was different from version 1.3, what upgrade procedures are necessary, or what incompatibility problems may exist. As usual, that sort of information will appear through the pages of magazines such as ours.

At this time we know that reformatting of your hard drive is not necessary, however you will need to make some small changes to your mountlist. Workbench 2.0 is still officially in Beta form, and is therefore a little unstable.

Preferences

Eleven different preference editors are included, each of which provides control over a specific group of settings. Many favourite public domain utilities will be made obsolete because of features activated by these programs. These include mouse acceleration, Workbench patterns, larger-than-displayable sized screens and function key settings.

The jumbo-sized screens possible under version 2.0 allow programs such as *Professional Page* to take advantage of the much larger Workbench-screen area and display an entire page at 100% magnification.

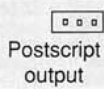
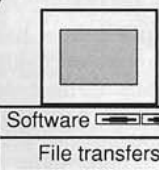
Conclusions

Both Commodore and software publishers have the unenviable task of ensuring compatibility with existing software is achieved. At this time, a significant number of programs we tested failed to operate, or failed to correctly display all requester or gadgets.

Workbench 2.0 is all well and good, if it works with other software. Lists of compatible products have started appearing in overseas magazines. Many products now boast a Workbench 2.0 compatible badge. It looks like we can safely look forward to the release of this improved operating system. □



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Commodore's

Hard Driving on a Budget

At \$599, the Commodore A590 hard drive is an affordable option and one of the least expensive hard drives around. The power of personal computing is easier to harness once you have strapped on the high speed storage offered by an Amiga hard disk.

Commodore's A590 Hard Disk unit combines a 20 Megabyte hard disk drive with an unpopulated memory expansion area, which can be built up to take another two Megabyte of RAM. Mounted in a Commodore beige case which matches the appearance and colour of the A500, it looks quite neat when it's attached to the 86-pin systems bus on the left side of the computer.

This unit comes complete with its own separate power supply which is automatically switched by the A500. As it arrives in the box, the hard disk is formatted to 20Mb and has the complete 1.3 Workbench already installed. All you have to do is plug it in and turn on the A500 and 20 seconds or so later you are greeted with workbench.

Inside the A590

Inside, the A590 has an Epson HD755 20Mb hard drive and HMD755 SCSI controller, as well as an XT ST506 interface. Sockets are provided so that system memory can be expanded in steps of 512 Kbytes, 1 Mbyte or 2 Mbytes.

To populate it you need the 256K x 4 DRAM chips with a speed of 120 ns. or faster. At present day prices one should be able to purchase the 2 Megabytes of RAM for approximately \$250. If you are not technically inclined it pays to have the memory chips installed by a qualified person as they are very susceptible to static charges (especially in hot humid weather). It is not unknown for people to 'blow' them during installation.

However, if you feel competent, the

manual has explicit instructions on how to go about the job and which jumpers to set, depending on the amount of memory which you are installing. Another internal jumper will have to be set if you wish to use the alternative standard SCSI interface instead of the XT interface.

Commodore's A590 Hard Disk unit combines a 20 Megabyte hard disk drive with an unpopulated memory expansion area, which can be built up to take another two Megabyte of RAM

External

On the back of the unit are four dip switches, the power connector, and a standard 50 pin SCSI connector allowing you to add up to seven SCSI devices onto the system. (A SCSI - Small Computer Systems Interface - bus is similar in some respects to the 64/128 serial port, in that each device has its own unique device number allowing easy daisy-chaining of hard drives, printers, scanners, CD-ROM drives etc.)

Before you can start using your hard drive certain dip switches have to be set on the back of the unit, depending on your system's configuration.

Switch one needs to be set for either Kickstart version 1.2 or 1.3. If you are using Kickstart version 1.3 you can 'auto-boot' with the A590. This means that, when you switch your computer on, the hard drive will automatically boot up without having to insert a Workbench disk in drive DF0.

Switch two has to be set if several units use the same physical address space, as the system only expects one "Logical Unit Number" or one unit at every physical SCSI address.

Switch three is only needed for certain expansion hard drives which take more than 30 seconds to come up to speed (e.g. some Seagate drives); this is the so-called "Time-out Length" switch. (On the 2000/2090A systems, this function is not available so for auto-booting one must make a careful choice of hard drive unit itself!)

Switch four is not currently implemented, it's for future expansion.

Speed improvements

As supplied, the hard drive comes formatted under the "FastFilesystem". An internal DMA (Direct Memory Access) chip gives you a theoretical maximum data transfer rate of 2.4 Megabytes per second. Since we have read several adverse comments about the slow data transfer rates of these particular Epson drives, the performance of the interface appears to be quite effective, achieving very respectable data transfer speeds.

To most people, performance figures really mean very little, so a couple of examples may give you a better idea. PageStream comes on two floppies and takes 2 minutes and 30 seconds to boot up. The same program installed on the 590 takes only 26 seconds! That is more than five times as fast and is quite impressive.

For a second example, *Professional Page* loads from the A590 in approximately 35 seconds compared with more than 3 minutes from floppy.

Hard disk software

As we have said, the hard disk is supplied formatted and has the complete 1.3 Workbench already installed. Supplied with the unit is a 3.5" A590 Setup disk. This is a bootable WB1.3 disk containing all that is required for Kickstart 1.2 users to boot the drive plus extra utility software you may require should you ever need to setup, format the drive, or perform other functions such as adding extra drives etc. (NOTE 1.2 Users: You MUST boot from this disk since it contains all the device driver software for the interface and definitions for the hard drive itself.)

Programs include *Park* and *HDTtoolbox* and several clickable XICON script files are provided to make life easy. These include *FormatHD*, *PrepHD*, *InstallHD*, *InstallStartup*, *MakeBootDisk*.

Unfortunately, the A590 interface and driver software does not provide an 'auto-park' option as does the 2000/2090A. The PARK program 'parks' the read/write heads of the hard drive out of the way of the data tracks providing a safe landing zone for the heads when the drive is switched off. This program should always be run before you transport the unit to prevent damage to the unit and loss of data.

The InstallStartup script will copy the 1.3 Startup-sequence on your hard drive. The MakeBootDisk script is used if you are still using Kickstart 1.2. (Probably a good time to install 1.3 Kickstart to make use of the hard drive's auto-boot facility.)

If you wish to make changes to the partitioning of the drive or add new drives to the unit (including via the external SCSI connector), the *HDTtoolbox* program provides a relatively friendly solution. This program is a dramatic improvement over the A2000's 2090A where all such changes must be done using a text editor and "mountlists". The

software also permits validation of the drives and mapping of defective blocks etc.

All these programs, as well as an explanation of hard drive terminology, are very well documented in the manual that comes with the unit (Commodore's manuals have definitely improved over the last couple of years).

The only omission from the *Setup Disk* is a hard drive backup program, but fortunately there are quite a few good Public Domain programs available, as well as some excellent commercial ones.

Overall comments

One comment that has been made is that "it's only a 20 Meg hard drive", and to some extent this criticism is justified, but let us take a quick look at the facts.

A 20 Megabyte hard drive is equivalent to about 22 3.5" disks. If you intend to install a series of application programs on the hard drive, you will find that you can install a lot more than 22 disks on the A590, because you need only one copy of the Amiga operating system on this disk (i.e. one C directory, one DEVS directory, one LIBS directory etc.).

In fact, you only install the actual program and its associated files and not the operating system. This can mean a saving of up to 50% in disk space, so you may well find that you can install 30 - 35 3.5" disks on the 590, which should take care of most of your important programs.

Programs such as *Professional Page* and *WordPerfect* with its dictionary and thesaurus and compilers such as Lattice C are far easier to use on a hard drive.

On a 20 Meg drive one could install the maximum amount of program disks and save some data to 3.5" disks; however you may well decide to have a smaller range of programs on the 590 and save your data as well to the hard drive.

The A590 turns the 500 into quite a powerful computer. It is the logical extension for users who have outgrown the "standard" 500. Unfortunately, at the time of writing Commodore were unable to give us a release date or retail pricing.

Rumours suggest that the price will be in the \$900 - \$1400 price range but who knows?. Once you have used a hard drive on the Amiga, life is simply impossible without one! □



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The Perfect Marriage:

CD Technology and the Amiga 500

by Andrew Farrell

Commodore have taken a standard Amiga 500, added lots of memory, and reduced the design to fit into the innards of what appears to be a standard CD player. The difference is this CD player can also read CD-ROMS able to store over 540 Megabytes of music, sounds, animation, video and stills along with software to educate or entertain.

Commodore Dynamic Total Vision (CDTV) brings advanced interactive multi-media technology within the realms of affordability. It should retail in Australia for under \$1500. And what's more, it plays music compact discs too!

The unit is designed to send your av-

erage electronics consumer scurrying into the nearest CDTV retailer in search for this new device, offering the ultimate in interactive games with stunning graphics and realism, educational software with amazing easy to follow images overlaid with computer graphics explaining all.

The entire concept is yet another step toward the complete integration of the home entertainment system. From instructional programs on cooking, sports, foreign languages etc, to sophisticated electronic games, adventures and simulations never before thought of, the CD as a storage device opens some incredibly exciting possibilities.

How fast can you interact with a CD? The base data transfer rate is a mere 170K per second. This is slow. Fortunately, a 2 Megabyte per second burst mode also exists. You can LOAD about 500K of data in 3.3 seconds using this mode. A far more acceptable level of data transfer - possibly good enough for some forms of disk-to-screen real time computer animation.

For video images, Philips have produced another innovative piece of technology to cope with the speed problem. This is a DCT (Discrete Cosine Transform) system, which will squash the interactive data into such a tiny space that 65 minutes of moving pictures, plus digital sound, can be stored on your CD.

We presume DCT has been implemented in some form on the CDTV. A special file system handler for the Amiga, rather like an alternative to the Fast File System, called the ISO 9660 File System is also included.

The CDTV can be expanded with a range of devices, many of them infrared, including a keyboard and mouse. The unit will come standard with several enhancements above the usual Amiga 500 specifications. An additional 2K of non-volatile RAM will keep information such as preference settings, the system date and time safe when the unit is not switched on. Output is available in RGB, composite PAL or Component video Y-C (S connector type for S-VHS and Hi8), RF-Modulated and an optional genlock capability. All the usual Amiga 500 ports are included such as parallel and serial ports.

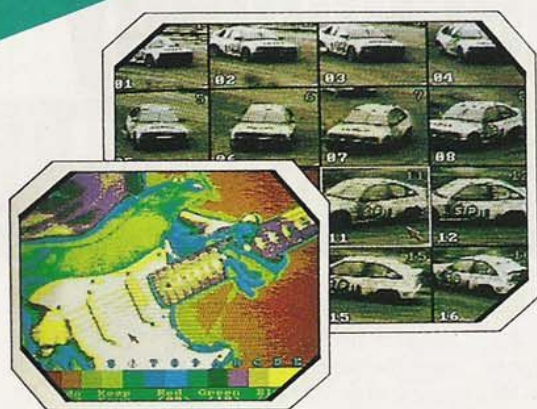
On the front of the unit is a port for a 64K personal RAM card. Each user will have one. It will contain high scores, saved games, personal information, or whatever else you happen to be personally using your CDTV for.

CDTV will be available early-mid this year, complete with dozens of titles, lots of rave from the press and a lot of people wondering what anyone would want one for. No doubt, before too long, CDTV will be as popular as the common CD, and as used as the facsimile machine. Oh, yes you can play normal music CDs, as well as CD-G (music with graphics) too! □

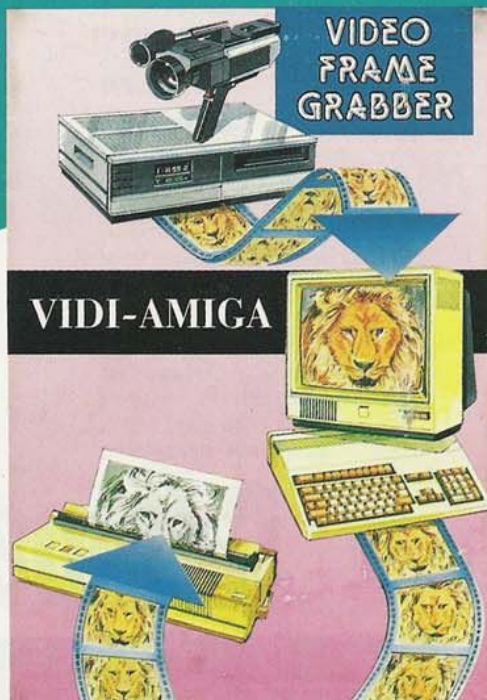


How does this grab you?

VIDI FRAME GRABBER



VIDI is the missing link in your graphics presentations. Using VIDI, a cable and your computer, you can capture video images from ANY source that outputs simple video signals. Cameras or videos, it doesn't matter, VIDI will grab a perfect image in 16 shades instantly! You don't have to pause your video, you don't even have to have a digital VCR. Multiple frames can be stored into memory for saving as an animation sequence, and the software allows full control of brightness and contrast to ensure top quality images. The uses for VIDI are virtually endless; Desktop Publishing, Desktop Video, graphics productions, program enhancements, animation; the limits are your imagination! **TO INTRODUCE VIDI AMIGA INTO THE AUSTRALIAN MARKET, PACTRONICS ARE GIVING AWAY, ABSOLUTELY FREE, VIDICHROME, THE AMAZING SOFTWARE UPGRADE THAT ALLOWS YOU TO DIGITISE VIDEO IN FULL COLOUR!!**



VIDI RGB COLOUR SPLITTER

If you have a colour video camera, the VIDI COLOUR SPLITTER is the ideal companion to VIDICHROME. The RGB COLOUR SPLITTER

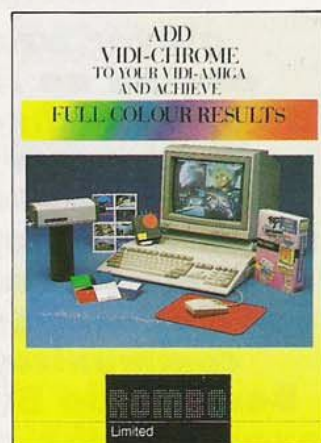
totally eliminates the colour filters normally required to digitise in colour. It does this by taking in a colour signal and then stripping it to the three colour bands, Red, Blue and Green. Using this, you can grab full colour

frames faster than ever thought possible. Take a rock solid image into your camera or from your video, and seconds later, PRESTO!! H.A.M. images better than you'd thought possible.



VIDI- CHROME

If you thought VIDI was good, wait for this! VIDICHROME allows you to digitise in FULL COLOUR! Using a series of coloured filters, VIDICHROME takes images, even from a black and white camera, and displays them in H.A.M. mode! It fully supports PAL displays, and can simultaneously display 4,096 colours on screens up to 320 x 512 size. For those of you with a colour camera, you may like to take advantage of the time saving offered by the RGB colour splitter.



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In the modern world, communications and its attendant technology play a fundamental role. From television and radio, to telephones and online databases accessible from your home computer, the information network has rapidly grown to extend into every aspect of our life. A process which began with the oral tradition of Homer and has encompassed figures such as Johann Gutenberg, Guglielmo, Marconi and Alexander Graham Bell is now preparing itself for a new generation - the generation of optical disc technologies.

That technology has been with us for some time in a small way. It is now

format, familiar to all CD audio buffs. This new size has been accepted as a standard and, compared to its outsized predecessor, deservedly earns the name 'Compact Disc'.

CD audio is now the acknowledged medium for the entertainment and music industry. Compact Discs outsell vinyl records and will soon completely overshadow the cassette as well. Forget about Digital Audio Tape. "The DAT format is widely believed in the industry to be just about dead as a mass market machine, stifled by high costs and threatened legal action", wrote *The Sydney Morning Herald's* David Frith.

Compact Disc Technology

THE NEXT GENERATION

With Commodore ready to launch their own CDTV, essentially a CD player wrapped around an Amiga 500, CD technology is about to blast into the future as the new medium for home computing, education and communications. Bernard de Broglie examines the recent history of this new format.

ready to become the new home entertainment medium. For some time institutions such as Monash University Library have installed databases on CD-ROM. Many of us have seen the beginnings of this technology with the advent of the ever popular video-laser disc game, *Dragon's Lair*.

Yet there is a difference between the feasibility of a product in expensive high-end applications and its acceptance within the broader public. An analogy may be made between optical disc technology and the computer industry in the 1970s. It took low cost, mass produced PCs to lead the computer revolution into the public sphere.

The first optical retrieval system was the laser disc, made famous by its stunning use in arcade machines, and once touted as an alternative to the VHS and Beta video formats. This idea was effectively knocked back because users could not record to a laser disc. Nevertheless, films on this medium were already selling in London's Virgin MegaStore in 1987.

Laser discs were the first product of the new technology, but they are no longer a serious alternative for the future.

New processes in manufacturing have resulted in the 12 centimetre disc

The ubiquitous music CD has a broader use in data storage. In fact, the manufacturing process is identical. 650 megabytes of text (about 300,000 A4 sheets of paper), 72 minutes of moving sequences, 7000 still pictures and 20 minutes of sound, 72 minutes to 19 hours of audio (depending on quality level) OR a mix of the above can be packed onto one 12 centimetre disc.

There is now emerging a variety of compact disc formats, designed to meet specific applications. Compact Disc - Read Only Memory (CD-ROM) is gaining ever greater acceptance as a data storage device. It is the cheapest method of storing mass information and has the advantage of brisk search-and-retrieval times.

At the moment, the costs of the technology and CD-ROM databases are prohibitive for the home or small business user. This year that will all change. Apple already have a CD-ROM player available, and Atari have an ST drive for under \$2000. For the average consumer this is all meaningless - a costly way to add to a system they could probably barely afford. CDTV from Commodore is the answer.

Other CD-ROM players around for some time now have been designed to work under MS-DOS. Hitachi, Philips and Sony have units now available, and

Denon, JVC and Toshiba may also enter the Australian market. Digital Video Interactive (DVI) also utilises the 12 centimetre CD, and can offer 72 minutes of moving sequences that compare in quality to a standard VCR. Vision is compressed digitally through a two RCA-set chip. This disc is then pressed as usual.

Compact Disc-Interactive (CD-I) must be the most exciting use of CD technology. For the first time, sound, vision, data and text, and user interactions are combined within the one medium.

Picture the school of the near future: an ancient history lesson begins with a look at classical Athens. The teacher di-

rects the pupils to look at their personal monitors. A quick search brings forth some information on the city from Athenian writers, Thucydides and Aristophanes. A map of Attica is called up. The students zoom onto the city and then examine the Acropolis in 3D colour, rotating their point of view around the site, and perhaps double-clicking on specific

buildings to reveal more detailed information. Battles are described with text and vision, allowing every pupil the opportunity to see the actual terrain of the country. Imagine how this could be applied to geography, science and English studies. Imagine the games software.

Compact Disc - Write One Read Many (CD-WORM) is one step towards the solution of that one problem - the inability to write data to disc. CD-WORM is used in 'in-house' electronic publishing and requires specialised encoding and recording units. As such it is not an option for the average user. Tandy have made noises about a Thor-CD format, which would allow CDs to be erased and recorded upon.

I quote David Frith once more:

"The trouble is that to be successful in the marketplace, any recordable system would have to be compatible with existing audio CDs. That means getting a li-

cense from the Philips group, which is hardly likely to rush to approve a system that threatens its own interests, both in CDs and recording."

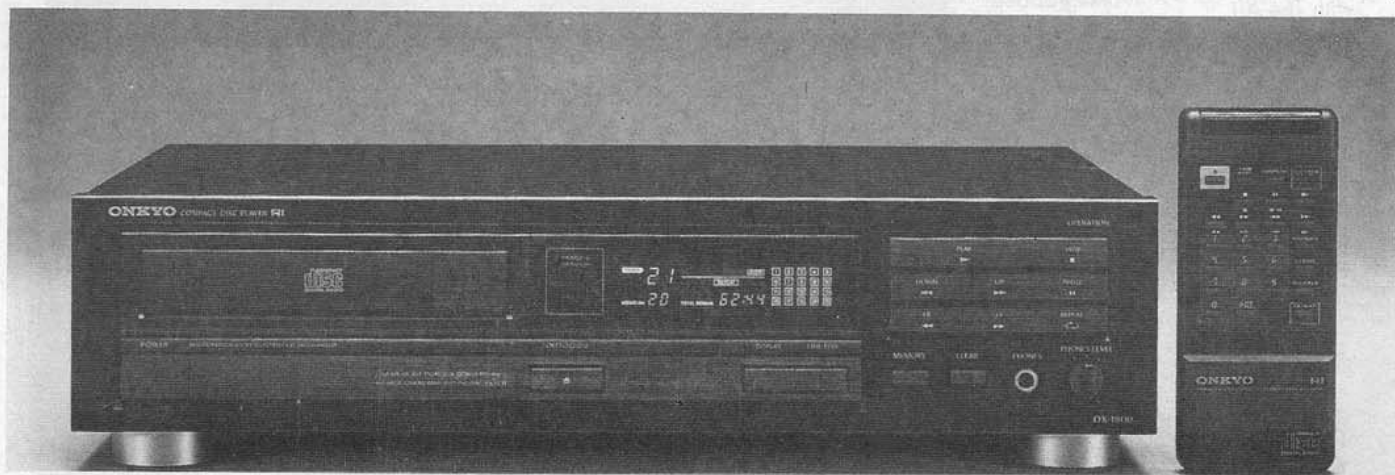
So how can optical disc technology be used right now? Xetec have a unit which sells in the United States for around US\$600. The drive comes complete with over 400 Megabytes of public

domain software. More importantly, it is compatible with the next step - CDTV!

What about the software end? How about *Facts On File News Digest CD-ROM*, which offers the full text and maps of any news item appearing the 1980-1987 volumes of the *News Digest*. A snip at only US \$695. Or the *Boorbank - Whitaker* database, which contains all the titles in *Whitakers (British) Books In Print*. Information on over 500,000 book records from 13,000 publishers is yours for a subscription (one year only!) of \$2640. Other useful purchases may include the Australian Bureau of Statistics' CDATA86 package, which would furnish the salient facts on the 1981 and 1986 population census.

Whether we ever see Amiga software to easily access these databases will depend on the success of the new device that the industry says will bring all the aforementioned technology into the homes of millions - to those who would buy a VCR or television but never consider a home computer - Commodore plans to sell them one, only it looks like your average CD player. □

rects the pupils to look at their personal monitors. A quick search brings forth some information on the city from Athenian writers, Thucydides and Aristophanes. A map of Attica is called up. The students zoom onto the city and then examine the Acropolis in 3D colour, rotating their point of view around the site, and perhaps double-clicking on specific



Animation & GRAPHICS

If you believe the advertisements, Amiga owners are impressed by sock removing animation, jaw lowering graphics and ear tingling sound tracks. Well, it just so happens that many owners do consider this a fun area to explore and have dived in head first, only to discover they've got the wrong program!

Unlike the MS-DOS world, the Amiga community has developed a number of file formats which make it possible for many programs to share the same graphics information. This includes 3D models, animation and still graphics. It is possible to start out with a couple of basic programs and work up to the big numbers without sacrificing your hard work or having to put aside what you've already learned.

Without any doubt, the first program to buy is *Deluxe Paint III*. At \$99 (previously over \$200) there is no other package which comes remotely close in value for money and power. *Deluxe Paint*

free hand drawing, full screen and brush animations, perspective drawing, warping and wrapping images, video titling, DVE's and more. If some of those terms sound a bit foreign right now, check out the glossary included with this article.

You'll probably find *Deluxe Paint* will keep your mouse pointer busy for a long time. However, when you're ready to move on there are two possible directions.

Digitising

Some prefer to tinker with still images or digitised graphics. You'll need a good HAM mode paint program. This enables you to paint images with 4096 colours, and easily edit, combine, colourise and play with digitised images. Two programs fit the bill:

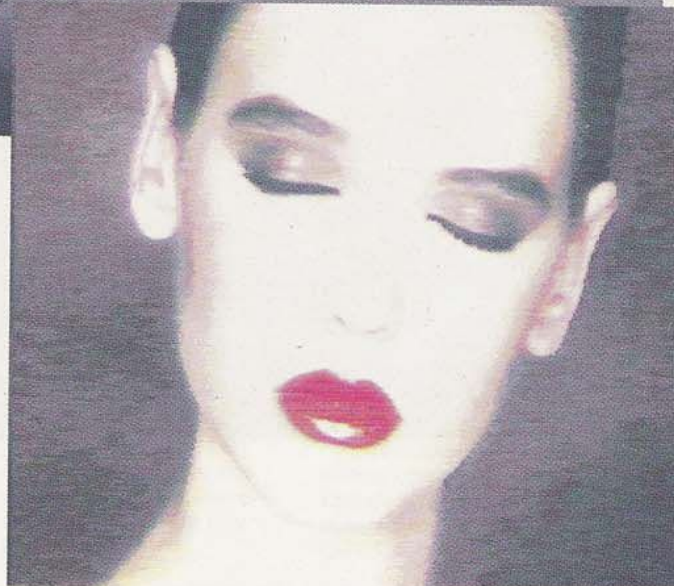
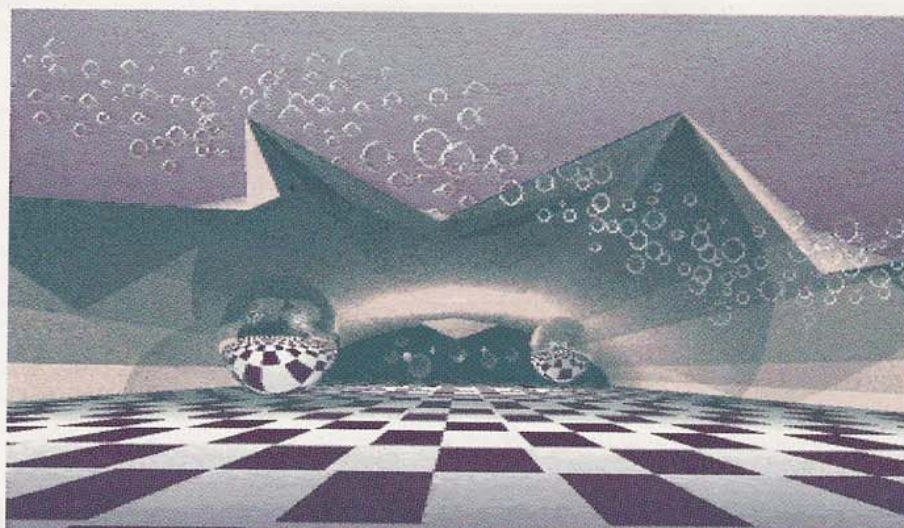
Photon Paint is great because it also offers HAM animation similar to *Deluxe*

can be used for everything from

Raytracing

Image processing allows you to combine different types of graphics. This one was done with The Art Department

Frame grabbed with Progressive's Framegrabber



Paint. If you decide to branch into ray-traced animations down the track, this is an essential tool.

However, if you plan to stick to stills, *Digipaint* is excellent. It has pseudo ray-traced texturing, fantastic fills which can turn a circle into a sphere complete with high light points. *Digipaint* also has some interesting text options which are handy for video titling.

When it comes to digitising packages (hardware / software combinations), there are two directions.

Frame grabbers offer real time digitising. You can capture a frame from any live or prerecorded video source. There are three main contenders in this area.

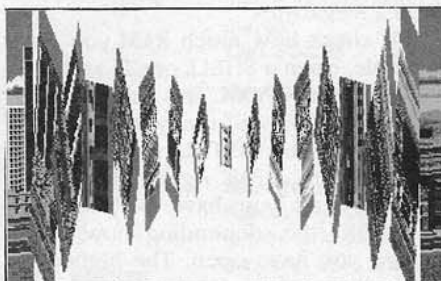
At the budget end there is *VIDI* which begins as a simple 16 grey scale frame grabber in lo-res mode. Add *Vidichrome* and it becomes a HAM digitiser. With a colour splitter you can also digitise from a still composite video source, such as a colour video camera trained on a photograph or scene. *VIDI* is under \$400 and the software is excellent for simple animation too.

At the top end are two high powered hi-res frame grabbers - *SuperPic* and *FrameGrabber 2.0*. Both are for the serious to professional user, with a price tag of over \$1200. *FrameGrabber 2.0* is reportedly the better unit, with full real-time HAM and 16 grey Hi-Res grabbing along with some strong picture processing functions. *SuperPic* is in use by more people, having been around in PAL form for considerably longer.

For still digitising, the choice stands at *Digiview Gold* and that's it - there are others, but none of these are readily available in Australia. *Digiview* can digitise images in Dynamic HAM mode which offers 4096 colours in Hi-Res mode - a unique capability. When it comes to cameras, digitising need only use a simple black and white security camera. However, a higher quality colour unit used with colour filters or colour splitter will provide better results. The better the camera resolution, the better the results.

Animation

Deluxe Paint owners who decide to pursue the animation aspect of this package will do well to consider *Videoscape 2.0* and a wad of extra RAM - the more the better - at least three megabytes is good. *Videoscape* allows you to create three dimension models which can be animated with complete control



Animagic

over the speed, direction and viewing angle of the camera, lights, target point and models. You might want to purchase a separate 3D-Modelling program too such as *Design 3D*. Add a package such as *ProMotion* and you easily create complex scenes with many objects travelling along predetermined paths created using movie like directions. The animation files created can be imported into *Deluxe Paint* for touch up.

The next step up is to raytracing programs such as *Sculpt 4D* - and a recommendation to head out and buy yourself some sort of accelerator card and some more memory again - around five megabytes is a good start. In these programs models similar to those created in *Videoscape* can be animated in a similar fashion. However, in the best rendering mode, each frame is created as a HAM image. To ascertain the texturing of each surface, an imaginary light beam is shot at each point and then traced around the scene. This creates surrealistic type images with amazing reflective qualities. Different surface textures can be used including glass and metal. This process is

very maths intensive and enjoys the extra speed of a maths coprocessor immensely.

Turbo Silver is a similar package with the addition of extra surface textures such as wood and marble.

The latest entry to join this fray of packages (and expect more throughout 1991) is *Imagine*. With more powerful object editing capabilities and the ability to wrap any IFF bitmaps (use *Deluxe Paint* or a HAM paint program such as *Digipaint*) around a raytraced object, *Imagine* takes the cake for ray traced animation. If you're about to make this size investment (over \$450), *Imagine* may be a better bet considering the publishers of *Sculpt 4D* are not concentrating on the Amiga market much these days.

To give your animations some special endings, openings or transitions, *Aegis Animagic* has some fantastic DVE and anim editing functions. *Animagic* can shatter the last frame of your animation, combine animations, alter timing, palette, frame order and dozens of other settings.

Where next?

There are many specialised packages in the area of multimedia (page xx) for presenting your graphics and animations as part of an overall work.

Or if you read the desktop video section (page xx), you can find out a little on how to record your creations to video tape.

If you're really serious you'll probably want to buy a good quality genlock. There are many video suites, advertising agencies, production companies and the like who can make good use of animation and graphics of the sort of quality the Amiga can produce. Make a demo reel and buy yourself a good book on Desktop Video. □



Animation Explanations

What is the **ANIM** format

The ANIM format allows storage and fast playback of sequences of frames using the minimum amount of disk space possible. It was first developed by Gary Bonham at Sparta Inc in California shortly after the Amiga was launched. Gary states that *Animagic* began its life as an Anim editing program - he found that it was difficult to capture a large animation without missing some of the vital frames. He needed a tool that allowed him to do edits on existing Anim files. When a series of IFF pictures are recorded as an Anim file they are saved in the following way.

Let us imagine you have created a series of 20 pictures in a paint program and wish to convert them into an animation. (This can be easily achieved with such programs as *Deluxe Paint III* using its animation facilities). When the final production is saved to disk as an Anim file the very first picture in the series of images is always saved as a standard IFF picture.

The next frame is then compared with frame one and ONLY the changes between the FIRST and SECOND picture are actually saved. The THIRD is compared to the SECOND and its differences are saved, and so on down the line until the 20 pictures have been read, compared and saved. The more changes that occur from one picture to the next, the larger the resulting Anim file will be as it has to store more image information.

The screen resolution you are using and the number of colours used for the original pictures also affects the final size of an Anim file. The Anim format has fast become a standard in Amiga animation circles (it is even endorsed by Commodore) and it is used by several other graphics software packages such as *Videoscape 3D*, *Video Titrer*, *Lights! Camera! Action!*, *Modeler 3D*, *Deluxe Paint III*, *The Director*, *Photon Cel Animator* and the Animation series of software produced by Hash Inc.

Do I need a Fat Agnus chip?

If you're doing a lot of work with graphics, the more memory your Amiga can use for displaying images, the better. This memory is called CHIP RAM or memory that can be accessed by the video CHIP. Older Amigas could address only 512K of CHIP memory. The more recent models have been shipping with the FAT Agnus chip which can address 1 Megabyte. The new Amiga 3000 can address 2 Megabytes.

To check how much RAM you have available, open a SHELL or CLI and type the command AVAIL. This will tell how much memory is currently available for CHIP, FAST and TOTAL memory. On a machine with a FAT Agnus chip, you'll probably find you have between 600 and 800K free, depending how many screens you have open. The higher the number of programs running on their own custom screen, and the higher the resolution of those screens (including whether they're in interlace mode or not), the more CHIP memory you'll be using up. Some programs allow you to turn off the Workbench screen to help save CHIP memory.

A FAT Agnus chip can be obtained from and fitted by your local CommCare centre.

Amiga colour and Ham Mode

Hold and Modify or HAM mode enables the Amiga to display 4096 colours in one screen. What's so special about that? Well, normally you can only display 32 colours at once. Here's why:

The hardware can direct the cathode in your monitor to shine its electron beam at 16 different intensities. Each intensity causes a phosphor pixel to glow in a different shade. Since the beam strikes red, green and blue pixels, which fuse to make the onscreen colours we see, the Amiga can render 16 to the power of three colours, or 4096. The computer stores code for these colours in 32 colour registers which are 12 bits wide. At

this size, each register can hold a number up to 4096 and hence denote any hue in the colour pool. The contents of each pixel's address in RAM refer to one of these registers, which in turn refers to the colour. This approach is called colour indirection, and it saves a great deal of internal memory.

There's an obvious price for it. Colour indirection limits the Amiga to 32 colours onscreen at any one time. We can load any colour we want into a particular register and so pick and choose among the 4096, but we cannot get more than 32 at once. Yet 32 is more than most computers allow and does not really hinder enjoyment of the machine. Moreover, colour indirection is not just a space saver. It is also a performer.

For instance, if you change the hue in one register, you instantly change it everywhere it appears on the screen. It cannot be otherwise, since every pixel that refers to that register must take on the new colour. It's a significant power and makes for lightning colour changes.

Colour indirection also makes it easy to draw single lines in multicoloured segments. You arrange for the paintbrush to paint in the colour of one register for, say, half a second, then in another for half a second, and so on, so that as you pull it across the screen, it leaves a trail of many tints.

Moreover, you can make onscreen colours shiver with iridescence. You arrange to move the contents of register 1 into register 2, and 2 into 3, and so on, like musical chairs, and the colours on the screen will cycle rapidly. The effect can be dazzling. You can alter the colours of concentric circles so they seem to be expanding, or, if you have painted a line with Cycle Draw, you can make the colour segments appear to travel rapidly down the line. And if you get the entire screen flashing, it looks like a light show.

Resolution

The Amiga has two main levels of display, low and high, which differ principally in resolution and number of onscreen colours. Each type has two subsets - or resolution/colour capacity: normal and interlaced.

In low resolution, the normal mode is 320 pixels wide x 200 high. If you move up a notch to the interlaced mode, the computer will spray the screen with twice as many lines and give a picture 320 pixels wide x 400 high. Normal requires 40K of memory, interlaced 80K.

In both modes, the palette can hold 32 colours.

At high resolution, the Amiga grows resplendent. High resolution also has two levels, normal and interlaced, and both allow a palette of 16 colours. Normal is 640 pixels wide x 200 high, and interlaced, 640 x 400, the finest resolution the Amiga has, and among the finest of any personal computer. Normal requires 64K and interlaced, 128K.

The Amiga's two interlaced modes work somewhat like interlaced fingers. In the first 1/60 second, the CRT electron gun covers a 320 x 200 or 640 x 200 screen, leaving empty spaces between each line it strikes. In the second 1/60, it covers another 320 x 200 or 640 x 200, but it shifts slightly down to fill in the empty lines. It's an easy task for the Amiga's video chip. The phosphor glow from the first display lingers on, and the mind knits the two images into one.

That's the theory, anyway. In practice, the phosphors from the first spraying have started to fade by the time the second one arrives. Hence, the two images don't quite merge. The result is quiver, slight but noticeable. There's no way to avoid it short of reconstructing the monitor so that it shows images faster than 60 times a second. The Macintosh uses this approach, but of course a similarly priced Mac displays only in black and white.

There is actually a third type of resolution, called hold and modify. Like low resolution, it comes in either 320 x 200 or 320 x 400. However, it lets you put the entire 4096 colours in your palette at once. Hold and modify works on a completely different basis from colour indirection. Basically, it is a relative rather than absolute system. It defines each pixel in terms of the pixel just before it. Hence, it holds the previous value long enough to modify it and get the new value. It seems poorly suited for animation and other shifting images and will probably be used mainly for static pictures.

Playfields

The Amiga's screen is more than just the product of its colours and resolution levels. Its graphics chips give it a special powers. They confer a structure on the screen and grace it with brilliant prowess in animation.

The first and most obvious element of that structure is the playfield. A play-

field is essentially an independent screen, the same width as the screen itself, but of variable height. Two playfields are available on the CRT, and each can have eight different colours.

Playfields have interesting properties. First, one playfield can have priority over the other so that it lays over it. At the same time, parts of the dominant playfield can be transparent, so you can look through and see what's happening on the playfield below. This characteristic fits playfields well for games. In *Skyfox*, for instance, one playfield, the cockpit, can heighten the effect of soaring over countryside.

Sprites

Sprites originated as a hardware solution to the difficulties of animation. They are small objects that move across the playfields. A sprite can be 16 pixels wide, that is, 1/20 of the screen in low



Deluxe Paint

resolution. It can also be as tall as the screen. The Amiga offers you eight of them, and you can get more by re-using some on the same screen. Each pixel of a sprite can have one of four colours. It's also possible to attach two sprites to each other, making one sprite with the capacities of two, and hence with a range of 16 different colours.

Sprites have several features in common with playfields. First, you can give them a hierarchy so that one will always appear atop another. In addition, you can make one of their colours transparent, so you can see through one sprite onto another. In fact, in some ways you can think of the playfield as simply a large sprite and vice versa. They have different hardware backgrounds, but

they can work in very similar ways.

Hardware animation

The Amiga's talent for animation really brings it alive. A computer screen can glitter like a handful of gems, but it's still static. Motion gives it past, present, and future, as well as verve and elan, and it can bewitch us.

The Amiga has two animation systems, one for playfields and one for sprites. The blitter - part of the Agnes chip - controls playfield animation and confers noble capacities upon it. It works at high speed, always a blessing for animation, and transfers images from one place to another. Such an operation means moving code about in the bitmap, and blitter is a telescoping of *block image transferrer*.

Animation on the playfield works like this. A programmer indicates an image on a background. The image and background are saved in memory. The programmer can then tell the blitter to move the image around as a block. With playfield animation, you can shift several dozen objects as well as fill spaces quickly and draw lines at an eye-popping one million pixels per second.

The second kind of animation is sprite animation. It works faster than playfield animation and generally controls the darting about of sprites. Intriguingly, if you run out of sprites, you can always use the blitter to set up other independent, sprite-like objects, to which there is no limit. Playfield animation is so good and can replicate sprite animation in so many ways that the latter has lost some of its importance.

Both types have a built-in collision detection capacity. The Amiga can tell when two sprites, a sprite and a playfield, or two playfields have bumped into each other. It's a useful feature. In games, objects strike each other all the time, and if the hardware can sense the impact, the software can move on to better things, making the game richer and faster. Collision detection also lets you confine roving objects to a prescribed territory.

To make use of these capabilities you'll need to program in C, machine language or BASIC or try a high level language such as Blitz BASIC or AMOS.

What is a DATABASE?

by Andrew Farrell

A database enables you to file information in an organised manner. Database programs range from simple list managers to powerful relational-database products which enable many files to be accessed at one time. Many such programs are not limited to storing text and numbers. You can just as easily have a database of music, sounds or pictures as you can a client list, or product catalogue.

In order to store information in a fashion that can easily be dealt with later on, a database is usually divided up into records and fields. The information relating to one entry in your database is a record. Each piece of information within that record is recorded in a field. For example, a simple database recording car makes and models might have a record containing the car's name, manufacturer, engine specifications and performance ratings. All the information relating to one entry is a record. An entry such as the engine capacity would take up a field defined to handle a data entry of specific kind and length.

Lots of records together go to make up an entire file. That's the basics.

Of course, as soon as you lay down any rules and limitations on how databases work, someone will break them. Some programs now enable you to have fields and records of variable length, growing in size as you fill them. These programs are more suited to filing information such as reports, articles, stories or descriptive passages which may vary widely in length from one record to the next. However, the information may still be retrieved in the same fashion as a more tightly structured database.

Most database products enable you to view each record in a variety of ways. Some have a default display arranging the fields in a set pattern down the

screen. Or you may be able to view the data as a table or list. Other more powerful programs let you design a custom form which might even include graphics. On these forms each field or entry point can be placed anywhere on the screen. You can even create forms which look a lot like their paper equivalent, making the transition to electronic filing an easier smoother process.

Your records may be retrieved in a number of ways. Usually the order of your entries is maintained using an index. This is a separate file which contains a field or group of fields in alphabetic order. Rather than rearranging all your records every time you add a new entry, only the index file which contains just those fields which must be sorted is altered. A pointer in the index tells the database where the rest of the information is in the main database file. A good database will allow you to have several indexes active, each of which can look at one or more fields.

Setting up a database

FORMATTING: you begin by designing a form, which gives structure to your database. Typically, this task entails listing the categories of data you want to access. For instance, if you wish to compile a database of information on your pet wasp collection you might create such categories as colour, sex, stinger size, breeding capabilities and dental records. This design is the basis for each record, and each entry corresponds to each field.

INDEXES/KEYS: next up you'll probably have to decide which fields are the most important. If you want to be able to sort your pet wasps by colour, you'll have to make colour an index field. Having this field as an index will mean you can quickly locate entries according to colour, or create reports or

lists of a group of records matching a certain colour. Some programs refer to an index field as a key field. This is much the same thing.

DATA ENTRY: after constructing this amazing synopsis of recorded messages you must then type in the information itself. That's a bit of a drag. A good database will allow easy editing of previous entries and offer a batch entry mode which assumes you wish to add a new record when each preceding one has been accepted and saved.

RETRIEVAL: diving in and getting it. With the wasp collection, for instance, you could list all wasps that lived longer than four hours, how much pollen they managed to suck from your mother's chrysanthemums and flight hours logged between home and the field. Some programs enable you to set up multiple criteria for retrieving data, others may allow only one.

PRINTING/REPORTS: when the time comes that you want to print parts of your database, perhaps in a certain order, the printing faculty lets you arrange your output in a manner pleasing and satisfactory to you. Sometimes you design a special form, others just ask for a filter to know which ones to print out.

Types of databases

Most of the databases you're likely to see on personal computers fall into two categories: file managers and true Relational Databases.

File managers, or file management programs, are less complex. They are easy to use and relatively inexpensive. However, they are generally limited to list management and even there are somewhat awkward. A more complex database will let you access more than one file at a time and sort several fields simultaneously. A file manager normally restricts you to one field at a time.

Moreover, while the more powerful databases may allow extensive calculations so that certain fields can even depend mathematically on others in the manner of a spreadsheet, file managers have a much more limited capacity for computation. Two examples of file managers are *Infofile* and *Microfiche filer*.

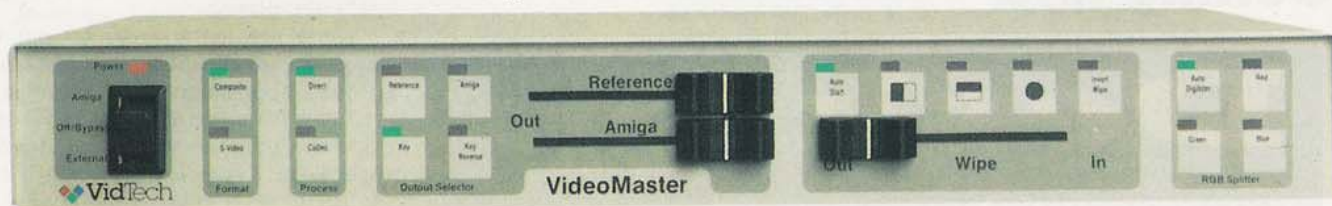
A true relational database is more complete. By definition, it allows at least these five major operations: adding and deleting records, searching records, searching fields and relating fields in the records of two database files.

Continued on p22

VideoMaster

Broadcast Genlock, Frame Grabber/RGB Splitter

Video Mixer - Fade/Wipe, Transcoder - PAL, S-Video, RGB



VideoMaster integrates in a single system all the functions necessary to transform the Amiga computer into a fully featured multimedia workstation without using the video slot. VideoMaster performs the following functions:

- ◆ Genlocks the AMIGA graphics to incoming composite (PAL) or S-Video source (S-VHS, Hi8).
- ◆ The genlocked video production is available in composite and S-Video formats as well as RGB for optimum graphics.
- ◆ A built-in RGB splitter provides for direct connection to a digitizer including a compatible interface to Digi-View Gold 4.0.
- ◆ A special effects generator produces horizontal, vertical, circle and inverted wipes—automatically timed or manually controlled.

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RGB

S-VIDEO



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Vertical, horizontal and circle wipes timed by VideoMaster or controlled manually. Inverted or combined multiple wipes for special and unusual effects.

Digitize External Images

Connect your Digi-View Gold 4.0 digitizer, set RGB splitter to Auto and VideoMaster will synchronize the digitizer to R, G and B signals. Under manual control, select RGB sequence and interface to most commercially available digitizers—no B & W camera with color-wheel required.

DEALERS: NSW - Hard Disk Cafe 994441 (Karen). Computer Spot 744 8809 (Bob). ACT - Amalgamated Bus. Machines 804887 (Michael). VIC - Busi-Soft Computers (03) 890 8900 (George). QLD - United Computers 282 6233 (Royce). (Tsville) Active Computers 723793 (Trevor). WA - Bruining Headlam 381 2988 (Nigel). SA - Cybex Computers 267 5855 (Peter). TAS - The Floppy Shop 730606 (David).

The S-VIDEO GENLOCK
for all Amigas
A-500/A-1000/A-2000/A-2500/A-3000

RGB Processor

VideoMaster generates RGB video and graphics for direct connection to an RGB monitor or projector. The standard Amiga monitor can display reference video and Amiga graphics optimally in RGB mode.

Transcoding

Create composite productions from S-Video reference source. Create S-Video productions from composite reference video. VideoMaster output is continuously available in all three formats. (Composite, S-Video, and RGB).

Record with No Reference Video In

No problem! VideoMaster generates internal sync to allow the Amiga artist to record his animation in either composite or S-Video.

Amiga RGB Session

No recabling! Set VideoMaster to Off/By-pass and develop RGB graphics for your next production.

Key Out

Compatible with the video mixer in your studio ensemble.

Leave your Amiga Video Slot Open

For use with other video add-on cards that add sizzle to your productions.

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Video Dealers should contact Color Computer Systems P/L for details.

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Databases

For example, you may have a database of clients and a separate database of transactions. To create a form which lists the client related to each transaction automatically, you would create a relationship between a field in common in both the transaction and client file - probably the client name or number, or some code. Two examples are *Data Retrieve* and *Superbase Personal II*.

The most powerful database products of all can be programmed. That is, you can create a file which lists a series of instructions to be executed. Powerful structured programming commands may be included. In a best case, you can design a completely controlled database environment which presents menus and requestors to the user in an easy to follow manner. *Superbase Professional* and *Professional Data Retrieve* offer this facility. *Dbman* does too, however despite being *dbase* compatible, it lacks Amiga features.

See the Software Guide in this Annual for more database products. □

File: User_Groups Records: 64 Index: Group_Name "Input"

The screenshot shows a graphical user interface for a database application. At the top, a status bar displays 'File: User_Groups', 'Records: 64', 'Index: Group_Name', and '"Input"'. Below this, there are two overlapping windows. The background window is titled 'Phone-Book' and contains fields for 'Name' (Lindsey Haynes), 'Phone Numbers' (818 5538), and 'Fax' (555 7579 wk). The foreground window is titled 'User Groups' and contains a form with the following fields: 'Group Name' (Albury/Wodonga User Grp), 'Contact' (David Welles/Gerry Bloon), 'Phone' ((060) 25 4757/(060) 21 5227), 'Meetings' (1st Monday each month Feb. to Dec.), 'Computers' (empty), 'Postal Address' (558 Creyfern Court), 'Suburb' (Lavington NSW), 'Post Code' (2461), 'Members' (empty), 'BBS Phone' (empty), and 'BBS Name' (empty). On the left side of the 'User Groups' window, there is a vertical toolbar with icons for 'Trash', 'Undo', and 'Clip'.

Database glossary

BATCH ENTRY

A method of entering data into a database. In this method all new data is stored in a file and then merged with the existing data in programs that employ batch entry.

BOILERPLATING

A method of integrating data from different files to produce customized output in a standard format. Mailmerge is a type of boilerplating wherein names and addresses from a list are substituted for specified variables in a form letter.

DATA TYPES

The type of data a field can hold. Most databases allow you to specify data types. Common types are text fields, amount fields, date fields, and numeric fields. For example, in an inventory database, you would specify a name field to type text and a price field to type amount.

ENTRY

A single unit of information. A telephone number inserted into your personal directory for instance, would be considered an entry.

FIELD

The fundamental building block of a

data file or a database. A field contains one discrete piece of information, such as a name, post code, or phone number.

RECORD

A grouping of fields that contain related information. For example, a client record might contain a name field, an address field and a phone number field.

FILE

Is the entire database, a grouping of records that share identical field definitions. It is not, though, your database program, which creates many files and stores them on data disks.

These concepts form the framework of almost all databases. The database file is composed of individual entries as the spreadsheet is composed of cells. You may group entries with those of a similar type, as a field, and with those having the same reference point, as a record. Using this pattern, you can then search, sort, retrieve and print all in a variety of time-saving ways. For example, a student file would be a grouping of student records, each containing the same types of fields about each student.

INDEX

A table that contains a pointer to each record in a file. Indexes are normally ordered according to an index of key fields. The file itself is not searched or sorted but the operation is performed on the index to the file. Sorting the index to

the file is much faster than sorting the entire file.

RANGE

a standard you set for extracting information from a database. For example, if you want to extract white-collar crime statistics for the 1980s from a police database, you would specify a range where date is greater than december 31, 1979 and crime-type equals white-collar.

RELATIONAL DATABASE

A database where fields can be shared by two or more files. If your inventory and income fields share an amount field, for instance, a sale posted to either file can change the other one. Shared fields define the relationship between the files that make up the database.

REPORT

A listing of information from a database. Information reports fit an indicated form or criteria.

SEARCH

For retrieving specific information from a database. When you instigate a search, you supply the conditions or range for the data you want to locate. The information you are searching for can be further refined by specifying compound range criteria.

SORT

A process by which the order of records in a file is changed. One field is selected as a key field, then the sort routine orders the records based upon the contents of the key field in each record. For example, an alphabetical sort on the last name field in a student file will reorder the records in the file based upon the last name of the students. Most databases allow multiple key sorts.

Project Record Process Set System Program

SUPERBASE PEOPLE

ID Number: 0001

Name: Simon Tranmer

Department: Research and Development

Job Title: Chief Designer and Programmer

Notes: Simon Tranmer -- the creative genius who brings you this extraordinary masterpiece of the programmer's art.

Simon

Navigation icons: [Back] [Forward] [Home] [Search] [Print] [Close] [Help] [Menu] [Exit]

VIEW

An application specific way to look at data in a database. Many times you only want to see part of the data in a large database, so most database programs allow you to specify different views for working with the same data. Each view uses a subset of the fields that make up a database. □

Project Record Process Set System Program

Superbase program: clientdepts

REPORT Amount Deposits

BEFORE REPORT

AFTER REPORT

2 ATTR OFF ; BF ; UL ; R23 "Clients' Deposits on " ; 612 TODAY

2 BF OFF ; UL OFF ; R2 "Date" ; R21 "Bank" ; R40 "Account" ; R61 "Amount Deposited"

END HEADING

GROUP Lastname.Clients.Amount.Deposits

Superbase: SRDATA/Deposits indexed on Lastname

Navigation icons: [Back] [Forward] [Home] [Search] [Print] [Close] [Help] [Menu] [Exit]



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Y Drive Adaptor \$25.00

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DTP

Desk Top Publishing

by Andrew Farrell

Doing it all yourself can save you a bundle, or plant you square in the middle of a giant mess. Worse still, you might walk away thinking you've done it right, when nothing could be further from the truth. With desktop publishing, the above is very true.

For home use, publishing offers some wonderful opportunities for education, and small concerns such as club newsletters, flyers, advertising bills and graphics. For this I say jump in head first. With a program such as *PageSetter* and a reasonably good dot matrix printer you can have a lot of fun without much outlay.

As a business tool, the answer is really dependant on how much you're willing to learn, and how much you're going to try to do.

When it comes to internal requirements for forms, simple stationery and notices - desktop publishing will save you time and money. However, to get good results which really make your publishing work for you, some time must be invested in learning about the basic rules and procedures of the publishing process, especially in the area of good page design.

As a desktop publisher you become the writer, editor, designer, artist and publisher. The temptation to take advantage of every feature of your chosen program on the one page can often lead to newsletters which look like a print test instead of communicating your ideas.

What is DeskTop Publishing?

Unlike a WYSIWYG wordprocessor, desktop publishing programs offer you exact and complete control over where your text is positioned on the page, with more powerful selection of font settings, especially in the area of text spacing. The inclusion of graphic and structured drawing can turn a dull document into a slick flyer.

In most programs, the elements of

each page are placed in imaginary boxes which can be seen within the program for design purposes, but which are not eventually printed. A box may contain text, a bitmap graphic, structured images from *Professional Draw*, *Draw 2000* or using the right conversion utility, a shape from an Animation program such as *Videoscape*.

These boxes are the key to page design. Arranging them and altering the settings of each box is the essence of page layout. Whereas an artist dealt with strips of text which had to be pasted, trimmed and cut to fit, the electronic publisher uses sizing gadgets, drag bars and simple cursor editing to make every page perfect.

Unlike a wordprocessor, there is really no limit to where your text can be. You can create many boxes on each page. One for the heading, and several for the columns of text. Some programs can help automate this process by offering grids which each box will snap to as you place them on the page - a bit like the grid option in *Deluxe Paint*. Some can also create a new page with a default number of columns.

One of the advantages of electronic publishing is that adding or removing pictures or text on a page will cause the program to automatically adjust all the affected text. Boxes are linked together or handled separately, can be duplicated, moved individually or as groups, sized and scaled.

Fonts or typefaces can be scaled, sized, positioned and spaced hundreds of different ways. The best programs offer full control over letter, line and paragraph spacing. It's easy to have many fonts, in many different sizes on the one page.

When you have everything in place, the screen should look exactly like the final printed page (all the various guides and rulers can be switched off to view the layout). For a detailed look at two words or an overall view of the whole page you can alter the magnification. By the way - your page can be anything from a business card to a full A3 poster and more!

Publishing programs also let you work with textures or tones - in boxes or text. Some also offer colour, going as far as colour separating a page, a process which can save you a lot of money! Just about every aspect of page layout and design now has an electronic equivalent. It's a booming area with lots of companies, bureaus and people getting into publishing magazines, newsletters and reports which would have been too costly or time consuming to even consider prior to computers.

For regular updates on professional desktop publishing tools and a good look at what the Amiga is capable of, see our other publications, *Professional Amiga User* and *Australian Commodore and Amiga Review*.

Which program?

Although the choice is limited a lot by budget (nearly every desktop publishing program sits squarely in its own price bracket), here's a look at the few programs we consider to be the best, most reliable choices.

Pagesetter 2.0

After a couple of major facelifts, *PageSetter* is now available in a number of guises. The most recent was the inclusion of it with *Gold Disk Office*. In this form it enjoys even more improvements, including Postscript support. You'll also find *PageSetter* in *Publisher Choice*, a large boxed compilation, and as a stand-alone product.

For the remainder of this review, I'll talk about *PageSetter* in its latest form as *Page*. In the *Page* format the program actually has a number of features which are not in the more expensive *Professional Page*. Nevertheless, as far as desktop publishing goes, *Page* is no match for *Pagestream* or some other such program. However, in the low end publishing world, *Page* would stand up well against *City Desk* or any other cheapie entry level programs.

Outline font technology is included, which means you have a huge selection of fonts (although only two are included), and whichever you choose they'll always look their best. On screen they're very readable, and on a dot matrix printer the quality is astounding. Go to a laser printer too if you like - there's full PostScript support in this baby.

In the feature department *Page* offers all that we've come to expect as normal

in the world of desktop publishing. It is a full-blown package with a high degree of functionality.

Each page is made up of boxes which may contain text (imported from any one of seven different file types), bitmap graphics - including 256 grey scale images from a scanner or digitiser, or structured graphics created using *Page* or imported as a *Professional Draw Clip* - of which many are now available.

When you create a new page you have the choice to automatically generate a number of pages with preset margins, columns and gutters. Each column can be automatically linked too, meaning the text will flow straight from the end of one column into the start of the next.

Boxes on top of boxes can be overlaid, or they can be selected to cause the text in the lower box to flow around the top box. This is great for placing graphics, headings or page graphics.

The settings for each box can be adjusted simply by double-clicking on the box. A small window then gives you the option to select a border and fill, adjust the margins, TAB settings and box position along with a few other functions. Boxes can be moved around separately or as a group.

Each text box can contain many fonts, selected from the type menu. You can make many of these selections using keyboard short-cuts, which soon turn you into a very fast layout artist. However, for me - a serious *Professional Page* user - these short cuts are a source of frustration as they're just that little bit different from what I am used to. Why don't Gold Disk settle on some sort of standard for such things as selecting a font or point size?

The style menu offers you the ability to make text Bold, Italic, Outline, Underline, Shadow, Superscript or Subscript. *Page* has no kerning, however you can adjust the line spacing and select from any type of justification. Text editing is reasonable. The four levels of magnification help, as does the option to use interlace mode if you have a good screen filter to a Flicker-Fixer. Full cut, paste and copy functions are available along with a simple search and replace ability.

In practice, it's best to get the text right before you place it into a layout. However, if you forget to finish editing, you can run *Write* in the background, highlight the text you wish to export, and then zap it across from *Page* in one

keystroke (see *Write* for more details).

Layout tools provide you with some handy options for speedy page design. Measurement can be in inches, picas or centimetres. You can have a grid of any size which you can optionally have all boxes automatically snap to. The box outlines and column guides can individually be turned off and on.

The fill pattern for text or boxes is something I envy - even *Professional Page* doesn't have this. You can select from any of 16 fill patterns, or define your own. There are also a range of gadgets for manipulating fills - flipping them or rotating them as required. What is lacking in return for these wonderful fills is the old ink colour setting of *Professional Page* which lets you have grey text, or coloured text.

Page is a good quality mid-range publishing package for the Amiga. It offers all the basic plus a few whistles. It's very fast and rock solid. Together with *Write*, you have all you need to create your own stationary, brochures, newsletters and the like. The output is superb and the manual is good.

Pagestream or Professional Page?

A lot of very satisfied *Pagestream* users shrug their shoulders when they read my constant recommendation of *Professional Page* over their beloved program. Not surprisingly, many of them have never used *Professional Page*, or tried to product anything too complex on *Pagestream*.

Although offering some impressive bells and whistles, *Pagestream* is sadly lacking when it comes to getting the basics together. The included fonts are mainly non-standard and tend to turn otherwise well designed pages into a mess of odd looking typefaces. Admittedly there are some great options such as box rotation and powerful structured graphic editing. These are quickly forgotten when the program constantly falls over, leaving your work lost in a sea of constant GURU errors.

The latest release of the program is considerably improved. However it is slower than the previous release. A further update has followed which returns to the previous speed which I have yet to see.

Pagestream has seen many versions, whereas *Professional Page* has barely had three.

Throughout these improvements, significant features have been added each

time. Release 2.0 of *Professional Page* brings Pantone colour support, box rotation, multiple page views, 24-bit colour separation and more. This brings *Professional Page* right up to date with *Pagestream* in the features department. The difference is, *Professional Page* is more likely to work and to offer the control you need to make the more powerful features happen.

Attesting to this fact is a swag of Amiga magazines all produced - colour separations and all - on *Professional Page*. Indeed, in Australia there is one magazine fully colour desktop published for the Amiga which is really the final proof. As editor of that publication (*Professional Amiga User*) I can honestly say that the few problems we've had are insignificant to the amazing control *Professional Page* offered, the compatibility we enjoyed when going to Linotron output, the ability to make the simple functions work together to produce complex effects and the overall reliability of the product.

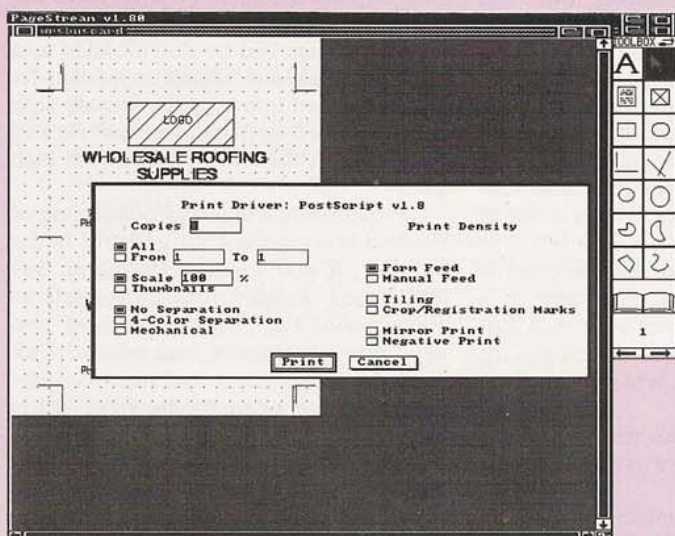
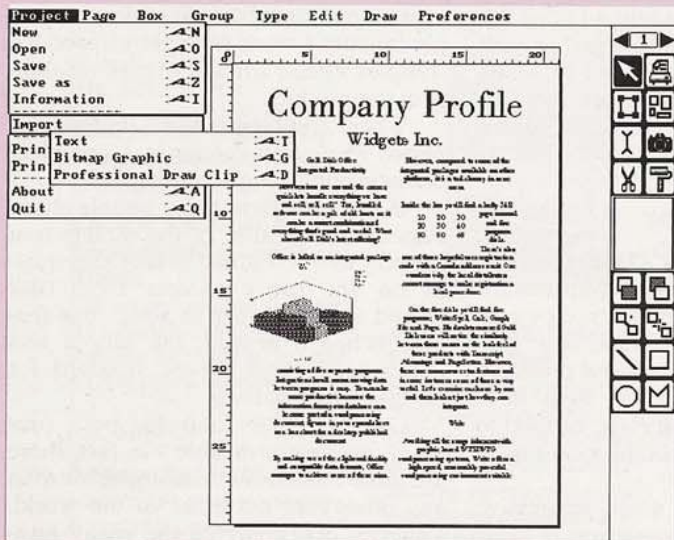
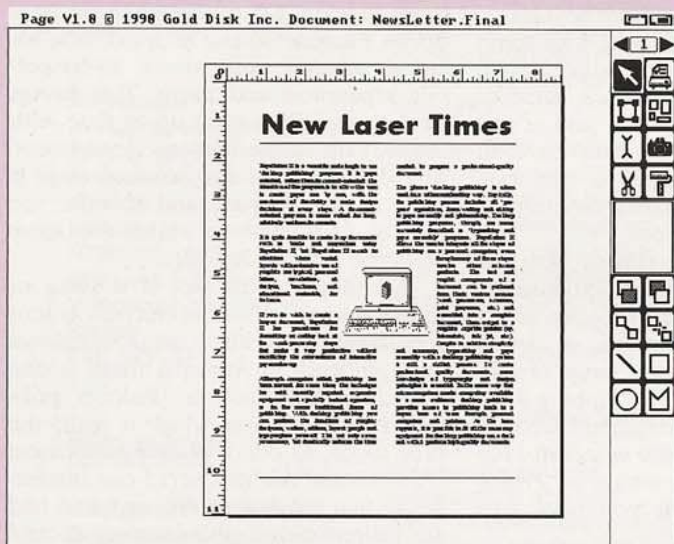
When combined with *Professional Draw*, *Professional Page* is a complete desktop publishing solution.

In the early days many people chose *Pagestream* because of the outline font support which resulted in fabulous quality on dot matrix printers. Gold Disk waited a little longer to adopt this feature. When it arrived, the output was better again, and a new standard for Amiga fonts was born.

Compugraphic fonts for both programs are now available - in fact, there are more fonts from Compugraphic than any other font publisher in the world. You can order any of the many hundreds available from Gold Disk. Selected groups of the more popular faces are available off the shell.

These fonts can be downloaded to a Postscript device, output to a LaserJet printer, turned into bitmaps for use with desktop video applications and viewed on screen in their full 72 dots per inch glory.

Professional Page also boasts one of the best text editing arrangements in the industry. If you run *Transcript*, an \$89 text based wordprocessor, as well as *Professional Page*, at the press of two keys you can export text which is already in page design into the wordprocessor, which pops to the front ready for you to edit. After editing, the text can be just as easily returned home with all layout settings intact. No more zooming in and editing at maximum magnification.



For serious use, *Professional Page* has what it takes. With an upgrade in the wings and the existing track record, there is really no contender as yet. *PageStream* is fine for fancy one page posters or small newsletters. It does not perform consistently enough to provide a serious professional solution.

One other program has appeared to contend the title of best desktop publishing program. That product is *Saxon Publisher*. Early reviews have highlighted some amazing features along with some serious shortcomings - such as the lack of support for some of the standard 35 Adobe fonts included with most Postscript laser printers. Once again, an update is in the pipeline. □

Desktop Publishing glossary

CAMERA READY : Artwork or copy ready for production of film which is in turn used to make the printing plates.

CHARACTER : An individual letter, number or special symbol is known as a character. A character is formed both on the screen and printer by a series of dots placed in a matrix.

CLIP-ART : Small pictures, or even parts of large pictures, that can be included in your designs are known as clip-art. Using a cut and paste function, pictures can be included in posters, banners, or newsletters with a minimum of fuss.

COLOUR SEPARATION : Dividing a colour image into the original four basic colours: black, yellow, cyan and magenta. With just these four inks, most colour images can be printed. Each colour is printed at a slightly different angle and position to the others. The human eye sees only the average colour of each area.

CROPPING : To cut a graphic in size by removing part of the image.

CUT : Allows you to remove a portion of text, or graphics, for pasting elsewhere, or to be discarded altogether.

DPI : Dots per inch.

FONT : A character set of one particular size and style is known as a font. Fonts are normally named. Some example are Times, Helvetica, and Avant Garde.

GUTTER : The space allowed between columns.

JUSTIFICATION : Text or graphics can be aligned relative to the left and right borders of the page. Text aligned down the left border is left justified. If you have left and right justification on, your text should turn out much the same as a column in this magazine.

MARGIN : The gap left around the border of your page is known as the margin. Margins also appear between columns of text.

PASTE : The process of putting text or graphics onto the page. Before you paste you'll need to cut.

POINT SIZE : A typesetting unit measurement which is roughly 1/12th of a pica (1/72"). This measurement is used in referring to font sizes and is the distance from the top of the ascender to the bottom of the descender.

TYPEFACE : A particular combination of type family, style and weight.

WYSIWIG : Acronym for "What You See Is What You Get". Pronounced wissy-wig. Most of the time, the page you see on the screen is a reasonably accurate guide to what you'll get on the page.

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Getting into

Desktop Video

by Andrew Farrell

If you own a VCR, you're a candidate for entering the world of desktop video - the ability to create music, video titles, animation, special video and sound effects or paint a moustache on your girl friend. Desktop Video is more fun when you add a few other hardware items.

Unlike most home computers, the Amiga boasts a high degree of compatibility with your television set. If you add a small RF-Modulator (some Amiga starter packs include this item), you can view the output of your Amiga on a standard colour television. You can also record the output on your VCR. This opens the door for a lot of fun placing title screens at the start of your own recordings. If you have a camera, you could even create your own professional looking video clips.

With a little more hardware you're on

the way to owning a computer capable of some serious work in video titling.

The device you'll need most is a Genlock. This little unit an incoming video signal and the Amiga together. The two images can be mixed together so that the Amiga graphics appears on top of the video picture. Wherever there is a certain colour on your Amiga screen, the video image will show through. The output can then be recorded on another VCR.

You can use this ability to overlay titles, or graphics and animation, onto prerecorded or live video and to record the result onto a new tape.

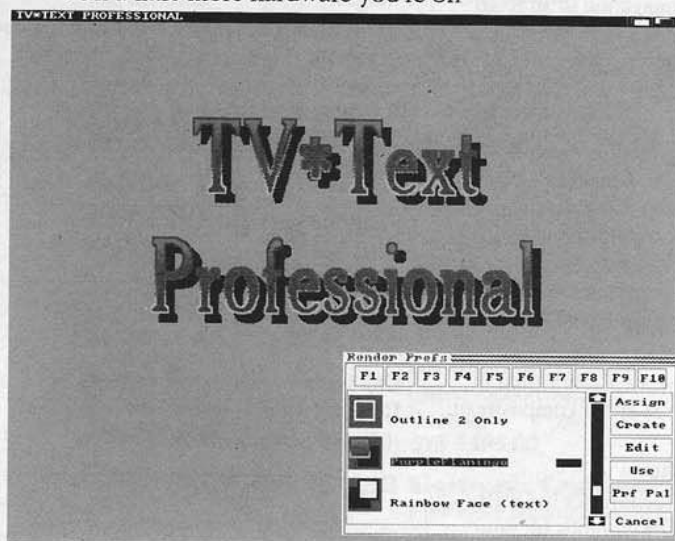
With the right software your Amiga is capable of producing titles and graphics which can be used in commercial video production. Artists, animators and videographers are using the Amiga to produce corporate logos, display captions or headlines for television broadcasts, animation for children's shows or

graphics for information booths using video disc players.

There are many areas to put your Amiga to work. Video is the fastest growing application of the Amiga. As such there is more software for desktop video and graphics work than any other application. Amiga is to video as the Apple Macintosh is to publishing.

Using the RF-modulator

Your Amiga produces a clean, crisp image best suited for display on a high quality RGB monitor. To see this picture on a television, it needs to be turned into the same kind of signal transmitted by TV stations. This is the job of an RF modulator. Using this device, there are two ways to connect your Amiga to a common VCR.



At the left hand side of the unit is a composite colour video socket. This is a simple RCA type plug. Using a cable you could make or buy from an electronics store, connect the Amiga from this socket to the Video-In connection on the back of your VCR. This may be a similar RCA socket, or it may be a BNC connector for which you will need the correct cable or an RCA-BNC adaptor. BNC connections have a turn and click type plug which snaps firmly home using a spring loaded fitting. If you're serious about video, try to stick to this type of connector where possible.

If you connect directly to the video-in plug, slide the record source switch on your VCR to video instead of TV. Later models probably have an LED selector which toggles through the various input options. With a monitor or television

connected to the VCR you should now see whatever your Amiga is displaying.

The television should be tuned to the VCR as usual. Do this using the test pattern and channel selector switches at the back of your VCR.

The second method to connect is to plug the aerial cable included with your RF modulator into the RF-In plug on the back of the VCR where you normally connect the TV antenna. You will then need to tune one channel to the channel the RF modulator is set to. Refer to the instruction included with this unit to find out exactly which channel this would be.

Recording to video

Best results can be obtained if you used a new high quality tape. If recording over old material, create a black screen and record this to video first, wiping over all the prerecorded material. This process will help revitalise older tapes, making them usable for reasonable quality recording once again.

The next important thing is to not use colour with too high a luminance setting. Composite video - the type your VCR records - cannot handle colour levels as high as your RGB monitor. You'll need to stick to slider level of 13 or less. This stops bleeding or blurring of strong colours. Certain colour combinations tend to play havoc with each other too!

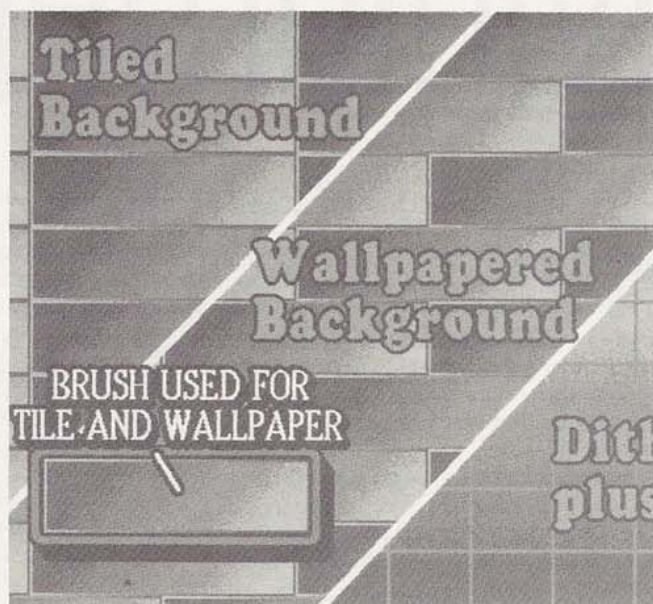
To create interesting headings or screens to record to video, you could use anything from a WYSIWYG wordprocessor which can display large sized fonts to *Deluxe Paint III* or a

proper video titling package such as *Professional TV-Text* or *Aegis Video Titler*. More professional video and titling programs are also available.

To achieve really good results, and to overlay Amiga graphics on video, you'll need a Genlock. Cheaper models are now available for around \$500. Of course, for serious work, you'll probably be spending around twice that.

For regular articles on desktop video, see our other publications, *Professional Amiga User* or the *Australian Commodore and Amiga Review*.

The Software/Hardware Guide in this publication provides more information on Desktop Video products. □



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What is Multimedia

by Andrew Farrell

Amiga is the ideal multimedia platform. It has the power to provide a presentation filled with images, sounds, music and animation without the need for extra hardware. It also has the ability to link with a video disc player, Midi instrument or SMPTE controlled device.

Applications of this power are numerous. The Olympic bid by Atlanta was won partly due to an amazing overview of the intended construction presented by an Amiga.

As the need to move products into the market faster; to communicate ideas more impressively, more convincingly; to remove socks and plunge them more deeply into plaster; so too the need for Amiga will grow.

Multimedia is all about the five senses of our human body being equally tempted and completely awe-inspired. Multimedia is the beginnings of virtual reality. But for now it is the communications and presentation way of the future.

In the past, the greatest difficulty facing persons wishing to communicate an idea using a variety of media simultaneously was the insurmountable problem of synchronising the different elements of the presentation. The Amiga makes this problem a thing of the past.

Several major products have helped to do this. It is now possible to project a video image onto a large slide screen. The still images, animated corporate logo, video stills and titled live footage can be easily interspersed with Midi controlled music, digitised sound effects and voice over along with computer generated sounds.

Showmaker

Outstandingly, *Showmaker* has promised all this and more, but as yet only Beta versions of the software have been forthcoming. Nevertheless, it has proved to be an indisputably unique and powerful program for presenting all of the above.

Showmaker can be controlled by numerous input devices, it can be timed according to the music beat, SMPTE time code, Midi or simple clock. The software can present a variety of media elements at one time, controlling music devices, laser disc players and other external devices.

We searched high and low for an equivalent MS-DOS or Macintosh based product. Whilst some came close, the asking price was many times higher. Most failed to meet even a few of *Showmaker's* capabilities.

Like other presentation tools, the package does not in itself allow you to create the raw material. This is best done using your favourite titling, animation or

draw programs along with a music program such as *Music-X* or *Bars and Pipes* - two of the best, both of which allow you to control a keyboard by means of MIDI. However, *Showmaker* does have some interesting in-built effects for transitions between images.

During playback, segments about to be displayed are preloaded automatically using a patented scheduler routine. Images arrive in the Amiga's memory just prior to their being displayed so you never have to wait for your disk drive to catch up. Continuous play is limited in time only by the size of your hard disk.

Certain video cassette players have an additional track which contains SMPTE time coding. This code tells the VCR exactly at which frame it is, and how much time has elapsed from the start. When this code is sent to the Amiga through an appropriate interface it can be used to trigger events within your presentation.

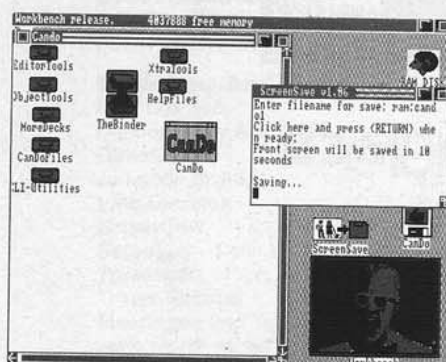
All of this is made simple thanks to the intuitive user interface. A show is displayed in one of three ways. As a time line events appear as horizontal bars on a graph where the X axis represents times, and the Y axis allows for each track. The start and end time of any segment can be adjusted by grabbing a slide indicator and dragging it up or down the time line.

In Storyboard mode events are listed in simple order of starting times. A miniaturised picture appears to show what you can expect - just like a real storyboard. This display can be printed out for an overview of your presentation. For a compact overview, the event list mode displays the associated file name, and its start and end time only.

Double clicking on an element of your presentation opens the parameter window. Tempo for music, frames per second for animations, and various wipes and fades for graphics can be selected.

ShowMaker has one of the simplest to understand, and easiest to alter presentation interfaces I have ever viewed. It is better than *Deluxe Video III*, the choice of many presenters right now. It is different to Commodore's *AmigaVision*, which is more suited to interactive presentations.

Professional presentation designers will love *ShowMaker*. Release is expected any time now. *ShowMaker* will retail for under \$400.



AmigaVision

The other end of multimedia is the slower paced interactive presentation, where the user can easily select which information is of interest and jump directly to a portion of video disc, computer graphics or text.

Creating presentations - interactive or passive, producing video titles requiring sharp looking wipes and fades or providing information at booths or to a student - *AmigaVision* is the fastest, simplest solution available now. Although not the most powerful animation tool, or desktop video package, it makes combining graphics, music, sound and video disk elements a pleasure.

AmigaVision needs plenty of memory - at least two megabytes is essential, unless you intend to keep it very simple.

The user interface is pleasing to operate. Each presentation is organised using a series of icons arranged in a structured parent/child fashion. You can keep it as simple as you like, or delve into the vari-

ous requestor settings deeper and deeper, tweaking the gadgets and sliders until the music, graphic or animation appears just the way you want.

User interface

In the past, products with these sorts of capabilities required the use of a script language or peculiar combinations of gadget settings and command lines. All too often, programs which tried to be easier to use did so at the loss of power. I was surprised to find that despite the deceptively simple method used to build a presentation, *AmigaVision* has not sacrificed any significant degree of power.

An entire program of events is designed using icons

on a grid where time flows along the y-axis (down the screen) and levels of activity are nested along the x-axis (across the screen). Slide bars and sizing gadgets enable you to alter how much you can see of your creation at one time. Multiple windows may be open, and elements can easily be copied and pasted between and within a presentation.

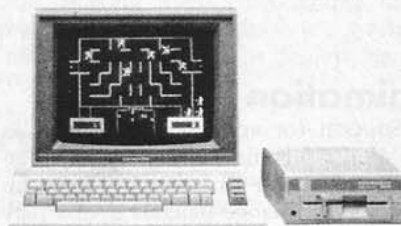
Each icon represents part of the logi-



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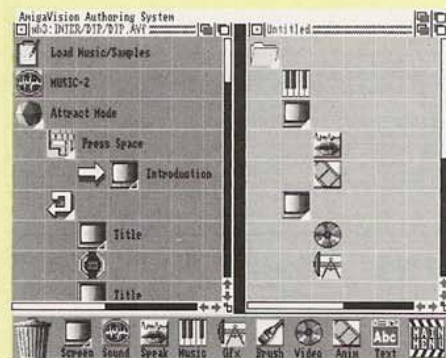
User interaction

Keyboard and mouse input can be used to trigger the next event. These wait points can be made to time-out after a certain amount of time. You can create menu screens on which the user must click. These are called hit-points, and are defined using a separate editor.

Each hit point can generate a different

result, which is passed to the next icon - for example, an IF... THEN conditional jump, which will move to a different part of the presentation if the condition is true. A full set of functions and operators are available to make the testing of conditions possible.

This ability is what makes *AmigaVision* truly interactive - the program can ask for input, and then change what you see depending on the result. The possible applications for this type of display are endless.



cal flow of events within a presentation. By double-clicking on an icon you have dragged into position, additional settings may be adjusted to customise the appearance of a graphics - for example, the manner in which it wipes onto the screen.

Occasionally, editing seems very tedious, especially when making small adjustments over a large number of presentation elements. Our other problem was the fact we were using a Beta version, which tended to crash occasionally when saving to disk. Fortunately, *AmigaVision* makes a backup copy of a file before saving over the top of it. You can then revert to your most recent save and resume editing.

AmigaVision gives you the option to slant your presentation toward a database-like interface, with complete support for *dBase* compatible file structures, field and record input, along with plenty of program control at each level to handle variables, user input and interaction between the various elements.

Animation

Support for animations recorded in ANIM OPT 5 is included. This is the latest, most popular format, which includes the ability to change palettes in mid-play and vary the timing between frames throughout the animation.

AmigaVision needs more attention in this area - it lacks the brush-anim feature found in *Deluxe Video* and *CanDo*. Brushes can be displayed on a graphic - and there are some very powerful functions in this area for overlaying multiple brushes.

Open architected software allows you to cross the boundaries of what a particular product can do. You can easily trigger events in other programs to produce the desired effect. Three options are open to the *AmigaVision* user.

The first is Video Disk. Not having seen a video disk work with *AmigaVision*, we can only take Commodore's word that it is a good and powerful function. all functions.

The second is AREXX - an interface for sending commands to other programs running in the background, so long as they too have an AREXX interface. These commands, written in script format, can perform many of the same functions that you could normally carry out if operating the program in question directly.

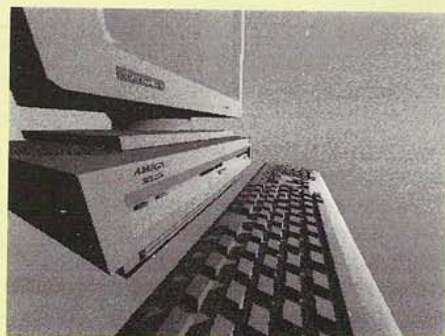
The third is the Execute option - to execute another program from either the Workbench or CLI. For example, you could RUN a PLAYANIM program from the CLI to display an animation format *AmigaVision* can not normally play - such as *Sculpt 4D* compressed format. You could also use this option to play *SoundTracker* music files.

Conclusion

Of the few limitations of *AmigaVision*, most can be overcome. There is a mass of power in there for tight presentations of stills and database information. When it comes to user interaction, *AmigaVision* is a dream to use - it is a quantum leap from the clumsiness of *CanDo*, and more powerful than *Deluxe Video*. *ShowMaker* has few interactive features.

Overall, *AmigaVision* is a well designed and executed package with excellent documentation and a solid reliable approach to interactive presentation design. With a little attention to the animation area, it could well stand to be the number one Amiga Multimedia product. Commodore will be releasing *AmigaVision* in the next three months.

Recommended retail price will be around \$199. □





Never again will you have to worry about illegal colours! This is the computer software package that knows what video people want.

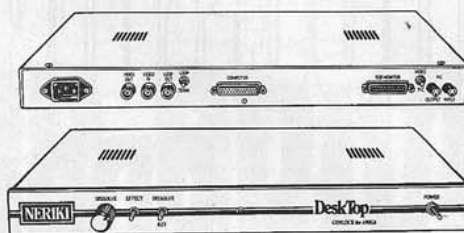
Designed to multi-task with other software and run on any model Amiga computer, Video Tools on Tap offers you forty much needed utilities and effects. The package runs in the background (when multi-tasked) without affecting the display until you tell it to do so. No graphics memory is used when inactive.

Neriki Video Tools on Tap gives new dimensions to "Desktop video application". It is now possible for all users of computers in video to produce a professional product without the frustrations of the past!

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***So what is a spreadsheet?
And what can you do with
it?***

In its simplest form, the spreadsheet is a giant electronic worksheet divided into rows and columns. Each square is called a cell. Each cell is

A cell can contain the result of a formula which performs calculations based on the contents of other cells. Cells can also contain text.

There are a few versions around for the Amiga. Some are part of integrated packages, some are very cheap, some are very powerful. The range goes from the public domain title, *Analyticalc* for \$5.50 to *Maxiplan Plus* at \$229. Like all software purchases, you are restricted by two things, your budget and what you need the product to do.

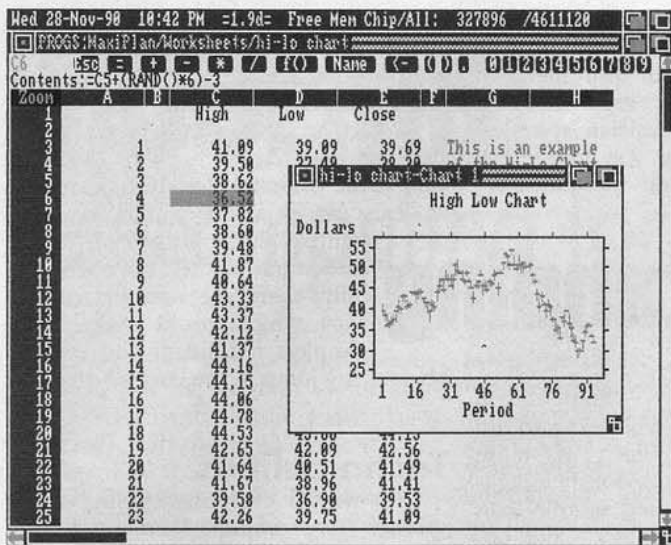
COMPATIBILITY WITH OTHER PROGRAMS:

FORMATTING: A good spreadsheet will contain a number of

GOOD DOCUMENTATION:

PRESET FORMULAS: Most spreadsheets come with numerous formulas already configured for your use. They can include mathematical formulas such as logarithms, statistical formulas such as for compound

[illegible]



indeed and your major limitation will not usually be software but memory.

SPEED: The speed at which a spreadsheet calculates is sometimes hard to assess, yet it becomes very important the larger your table becomes. The most powerful spreadsheets will minimise the finger tapping.

RELATIVE CELL REFERENCES: Formulas must refer to other cells because they operate on cell contents. The program can structure these references in two ways.

One is absolute cell reference. Relative cell reference indicates cells by means of directions from the cell with the formula. Usefulness? Well, say you have 24 columns of numbers, each fifty cells high and you want to add each column up. With absolute cell reference you would have to enter a new formula at the bottom of each column since the names of the cells to be added will change each time.

With relative cell reference, however, you can enter one formula and copy it right across the row. Time saver, and more impressive to your boss looking on.

WINDOWS: There are a lot of spreadsheets that will let you break the screen into two or more parts - windows - so that you can examine different parts of the spreadsheet at one time. Particularly is this helpful for large spreadsheets or for related ones on the same grid.

See the Software Guide in this publication for information on spreadsheet programs. □

The screenshot shows a spreadsheet window titled 'Fastbench Screen' with a sub-window 'Financial Templates/Balance Sheet.ADV'. The main window displays a balance sheet for 'Gadgets and Widgets INC'. The table is organized into columns A through H, with rows for various financial categories.

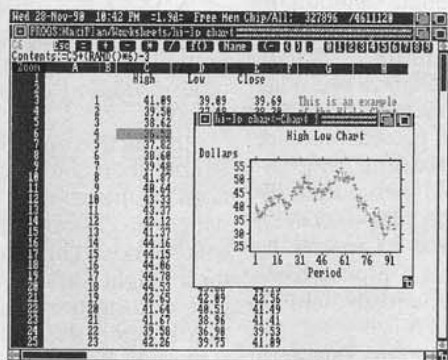
Category	Amount	Category	Amount
Current Assets		Current Liabilities	
Cash	100000	Accounts Payable	
Accounts Receivable	15000	Salaries Payable	
Inventory	80000	Taxes Payable	
Raw Material	18000	Short term Loans Payable	
Work in progress	12000		
Finished Goods	25000	Total Current Liabilities	
Total Current Assets	242000	Long-Term Debt	
Fixed Assets		Term Loans	
Land	21000	Bond Issues	
Plant	380000	SBA Loans	
Equipment	300000	Total Long-Term Debt	
Total Fixed Assets	701000	Net Worth	
		Preferred Stock	
		Common Stock	
		Retained Earnings	

interest, logical formulas such as IF-THEN, and trigonometric formulas such as sine and contingent. The number and utility of these formulas is one index of the program's power.

PROTECTION:

Certain spreadsheets will let you hide the contents of specified cells so they appear blank on the screen as you work. Normally you use a password to conceal or reveal these cells. You can sometimes lock cells too. This is handy if someone unfamiliar with the program is entering information into it.

SIZE: The program should be big enough to handle every chore you foresee for it. Most spreadsheets are substantial



Digital editing and sampling is fast overtaking the antiquated world of analogue recording. It offers more control, better quality, more possible applications and easier editing.

These demonstrate how music sequencing programs can take a single digitised sample and use it as an instrument, or sound, which can be reproduced at whichever note the musician specifies. Programs which allow you to arrange music this way include *Soundtracker*, *MED*, and *Sonix*.

Understanding Sound

Often you will hear a sound which is more obviously a digitised sample than others - not because of how

good it sounds, but because of distortion, loss of detail, chopping of high or low frequency parts of the music image and a generally crackly sound - it stands out.

Serious options

A good sound sample captures the original sound in enough detail to faithfully reproduce it within the constraints of the playback device. A compact disc player happily churns out exactly what the disk manufacturer intended - spewing out around 44.5Khz, or 44,500 samples per second of digital information. The crisp clean result is then at the mercy of the rest of your hi-fi system - which in most instances, although below specifications set by CD manufacturers, is normally more than adequate enough to hear the obvious improvement in playing digitally reproduced music.

In the ultimate combination of Amiga hardware and digital recording capabilities, the Amiga would provide record, edit and arranging, processing and manipulation tools. It would then output directly to Digital Audio Tape (DAT), which can then be used to master to compact disc. Sound like a pipe dream? The Apple Macintosh is already achieving this amazing feat.

High end systems such as Yamaha's digital recorder boast an eight track, 24 channel desk. There are three stereo effects processors allowing up to three effects per channel - for example reverb, pitch and chorus.

There are many more complex processes available. The entire system, including CD mastering, sells for around

\$40,000. An Apple Macintosh II running Sound Tools from DigiDesigns, along with the necessary 16 bit sampler card will set you back around \$10000.

Could an Amiga system for about half that cost handle the job? In theory yes. In the United States, 16 bit samplers do exist which can be used to create samples that can be later downloaded into a MIDI keyboard. Locally, there are rumours of systems which could make these samplers redundant and provide an amazing jump in the current quality.

Technicalities

But why is everyone chasing 16 bit quality? Two factors decide the final quality of your sample. The first of these is the frequency or sampling rate. The more times you sample a sound, the more accurately the digital sample can express changes, however slight they may be.

The standard Amiga sample rate used by most music programs is a mere 8363 samples per second - slow compared to a DAT player which can hit as high as 48,000. The faster you sample, the smoother the transitions, the better the quality.

However, the best Amiga digitiser can clock up 56,000 sps, but it is only eight bit. So what's that matter? An eight bit computer memory register can hold a value between 0 and 255. In practice this number is used to represent a variation of -128 to +128. This value represents the amplitude or volume of the signal.

A 16 bit register can hold a value as high as two to the power of 16, which is around 64,000 - giving a practical amplitude resolution of between -32,000 and +32,000.

In practice this means a 16 bit sample is able to record much smaller fluctuations in the volume of a given sample, which is critical when recording very soft sounds. The inability to reproduce these slight variations introduces a degree of distortion. The amplitude resolution is often referred to as the dynamic range.

Given that many digitising applications do not require high quality results, but are merely taking advantage of the computer's ability to modify, distort and replay a digital recording, the lack of dynamic range is not a problem. However, for serious music applications, this limitation is a serious consideration.

Given the rumoured arrival of 16 bit sound digitising (or something very similar) on the Amiga 'real soon now', creative Amiga users will discover they have a very professional tool available for work in the music industry and sound recording.

Using existing technology, sound quality is limited to eight-bit samples. This lack of resolution has prevented serious music industry use of Amiga as a digital editor, however there are still many commercial applications for the quite reasonable sound quality which can be achieved.

To fully understand these and other variables in the world of digital sound recording, let's take a look at what the Amiga is doing now and examine the limitations which exist, and how to work around them.

If you're looking for some good examples of what is possible with digitised sound effects, go no further than your favourite Amiga game. Many titles include digitised music or sound effects. These sounds have been captured from traditional recordings using a sound digitiser or sampler.

Games make good use of these samples, often combining several short pieces to construct a larger, more complex musical accompaniment to the game action. Most sampled sound effects in games consist of explosions, engine noise or weapon fire. These noises can be recorded at a low sampling rate which does not consume large amounts of memory.

Of more interest are the sound tracks which combine both digitised instrument samples, and synthesised sounds.

A 16 bit sampler for the Amiga would probably cost over \$1000. The software would be expected to support all sorts of bizarre functions. The question of demand arises in order to substantiate such development. According to proponents of the Macintosh based solution, such development has been worth while.

Sampling rates

Understanding the benefits from maximum settings for sound sampling plays little part in the day to day requirements you'll probably encounter.

Most sound samples are a happy compromise between acceptable quality and required length. Sampling inevitably consumes vast amounts of RAM. Memory constraints can mean you'll have to be happy with a lower sampling frequency in order to get the required length.

Many sound sampling programs only support recording directly into available CHIP memory - a part of the Amiga's RAM set aside for access directly by the video and sound chips, as well as for general data storage. However, once again, *Audio Engineer* has created new limits. It makes full use of as much contiguous RAM as is available - so you can digitise as large a sample as you have a single available chunk of free RAM.

When making the decision of how to trade-off sample length for sample quality, a basic understanding of waveforms will come in handy. If you are trying to digitise a frequency of, say, 500Hz (a little higher than the D above middle C), you are going to need at least 500 bytes recorded every second, or you aren't going to have enough of a sample to record every wave and your sound is going to be very distorted.

In practice, you will need about 1000 samples per second, because with only 500 you have functionally no chance of hitting the peak of every wave with each sampling 'shot'. If you synchronise wrongly, you may only sample the places where the amplitude is zero, as the wave passes the zero line.

This will give you a sample containing a whole lot of nothing in particular. And even this is probably not going to be enough, as a waveform's shape has as much to do with its sound as its frequency. A sawtooth shaped wave has a sharp, violin or brass tone, while a square wave has a tighter, resonant bell tone. So you need a high sampling rate to catch the bits of wave going up and down, not just the peaks and troughs.

Unless you're recording a single, monotonous noise, you're going to have higher frequencies in there that will sound very odd if you don't hike the sampling rate high enough to catch them. Even if all the instruments playing stick to low notes, all instruments have overtones and resonances that give them their character, and these can often be much higher than the note you think you hear.

A male voice actually has more high tones in it than a female one, and sounds very indistinct if they're filtered out - but you would still say the male voice is lower.

All the above considerations apply equally to these resonances, so in the end the sampling rate usually stuck to for mundane digitisations is around 10,000 samples per second.

Professional applications

In the commercial world, there are some often used applications of sound sampling we probably take for granted.

Radio stations, television studios and the like are equipped with huge libraries of sound effects machines to help make those embarrassing moments that little bit more infuriating for the show hosts who dare do it all live.

Many of these effects are digital samples. In fact, some are performed by the Amiga. Club Veg, a popular radio show on Sydney's 2MMM radio station, is hosted by Mick Davies - an avid Amiga user. Mick has been looking closely at using the Amiga for generating sound effects.

Their problem is the simple requirement of having a hundred or so samples on call at the push of a button. No doubt an expanded Amiga 3000 with *AmigaVision* could do the trick. For off-line effects, the Amiga is ideal for arranging samples and altering them ready to be recorded on a looping-tape.

Audio Engineer, a locally produced audio sampler with software, currently offers the best sampling and editing facilities, including digital sequencing.

There are numerous special effects you can obtain, with a

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Music

sampling rate of up to 56,000 sps, the quality is excellent compared to most units which would be fortunate to reach half this figure.

Possible effects

One of my favourite effects is to flip a sample and play it backwards. Apart from creating subliminal masking for supermarket background music, this option certainly provides a good deal of novelty value. However, there are other more practical effects which are also available.

ECHO provides that familiar standing in an empty factory sound. With *Audio Engineer* you can set the rate in 1/60 seconds.

The Decay rate controls how soon the echo fades away. For example, a value of 50 will make each consecutive echo 50% quieter than the previous.

MIXING WAVEFORMS can be used to add depth to a sample (by mixing a sound onto itself), or to combine additional sounds. The 'Flange' option determines the pitch at which the new data is applied.

A sample can be tuned by varying the rate at which it is played back. This function can dramatically affect the quality of the sample if used to extremes, but slight adjustments, especially of voice recording, can dramatically alter the voice quality making a male voice sound female and so on.

An entire sample can be moved up one octave, chopping the waveform down to about half its original size at the loss of some fidelity.

The limitation of simply varying the sample rate can be overcome using *Re-Sample*, which changes the waveforms sample data permanently without loss of quality.

Samples can be edited, using simple cut and paste function. You can even zoom in on part of the sample and alter the displayed data by

hand. Although a little primitive for altering sound, this facility is ideal for carefully removing unwanted noise.

Some of these effects can be handled in real time, including echo, delay and flanging - ideal for experimenting with a sample prior to selecting the final data altering settings.

Summary

Whilst the Amiga has a way to go before it could truly compete with other full-blown professional sampling systems, there are many applications for what capabilities it currently enjoys. We'd like to hear from any users of the Amiga's sound sampling and processing capabilities. If you have tips to share, please get in touch with us. □



The Denon DAT player.

Sound Sampling Hints

by Daniel Rutter

heck VERY carefully that your samples don't squarewave - i.e. don't run off the top of the amplitude scale. This wrecks the sound quality, and is a special problem when working from CD, with the extra-wide dynamic range of digital sound.

Try to keep sound sources on the same electrical circuit as the computer - if your source is isolated, any AC components will be on a slightly different oscillatory timebase, and you'll get whining interference. I did some samples from videos and they've all got the "Squeeeeee" overtone on them. The

problem is largely eliminated by using devices which run from DC adapters or batteries, but there aren't many of those that are worth sampling from - a baby CD player would be an exception.

ALWAYS turn off the high frequency filter for playback - it makes a HUGE difference. If your sample sounds better with the filter on, it can't be much of a sample.

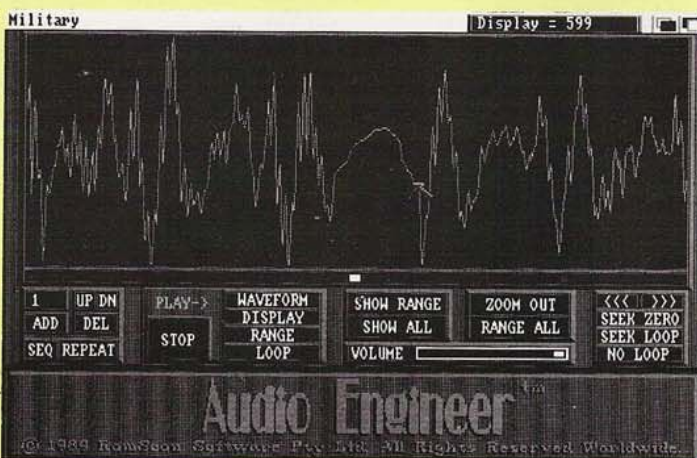
To get decent fake stereo from a mono sample, copy it to two files with suitable names and either put a slight echo onto one file, or a small initial delay, or both. Don't modify both files, or you'll end up with mindbending mush guaranteed to boil the brain of the listener.

Always use good connecting cables, and keep them as short as you can. Both of these reduce attenuation and noise - you'll not get much garbage from a foot of shielded oxygen-free copper coaxial. Don't use those silly gold connectors. The

cheap ones rub off, and they only improve contact when both terminals are gold - otherwise they just promote corrosion.

If you're short of disk space but not memory, try sampling at a high rate and using a utility such as *Pro Sound's* compression facility to squash the sample to half its size. Signal-to-noise ratio works out better because the garbage comes from outside the system, not inside.

When compressing sound samples for modem transmission, postage or whatever, use *PowerPacker*. Nothing else gets significant compression of the sample's very complex data. □



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WAVELENGTH - The distance between a point on one wave and the identical point on the next, peak to peak, trough to trough or whatever. Equals frequency divided by velocity. \square

The powerful part about all this is that the One Finger Ad-Lib phrases, the rhythm patterns and the chord sequences are all user programmable. The keyboard also has capa-

bilities to record 3 songs.

The FS680 is of course MIDI compatible, and this is where the Amiga and the software comes in. Connecting the FS680 keyboard to the computer is accomplished by simply plugging the compact MIDI interface into the Amiga serial port, and connecting two MIDI cables (also supplied) from this interface to the FS680. That is all there is to it. Now by booting up the Amiga with the disk supplied, the Steinberg Funlab software is automatically loaded, and the Funlab Music System is up and running.

Funlab software

The Funlab software provides many additional capabilities and benefits to the keyboard player. First of all, it allows the recording of songs in a multitrack fashion, that is using overdub techniques as in professional studios. The software also displays recorded tracks in standard music notation.

Lyrics can be keyed in and displayed in time as the song plays. And the software can simplify the control of the FS680 keyboard through graphical interfaces. Such functions as editing sounds, selecting rhythm and One Finger Ad-Lib, as well as programming your own phrases and rhythm can be much more easily accomplished on the computer, and downloaded into the keyboard.

Three demonstration songs are included, and any of these can be selected and played without getting into the main body of the software. As these songs play, the screen displays a keyboard, and the notes being played are indicated dynamically with small black squares.

Jukebox mode allows playing of pre-recorded songs on disks back through the FS680. There will be a selection of song disks available in the near future.

The main screen of the software is the sequencer screen. The Funlab sequencer is basically a five track recorder, with one track dedicated to rhythm, that is drums and percussion. The other four tracks are labelled Melody 1, Melody 2, Chord and Bass, to make it easy to construct a piece of music.

The software communicates with the FS680 using standard MIDI conventions. However, no technical knowledge of MIDI is actually required to operate the software at all. For instance, to select the sound to record in each track, the user simply clicks on the sound box for the track, and scrolls through the list of FS680 preset sounds. This compares with most other software which requires the

entry of program change numbers to select tones.

During recording or play-back, a volume slider for each track allows the real time mixing of sounds as on a conventional mixer. There is also a master volume slider to adjust the overall volume. Each track can also be muted if desired.

Recording a song

Now to the fun part. Let's say we are recording a song with drums, bass, a string part, a lead melody and a counter melody. First of all, the tempo can be selected by clicking on the tempo window. Songs can be recorded in a slow tempo for ease of playing, and played back at the right speed. To record the drum part first, we click on the Drum track, and the lower part of the FS680 keyboard now plays only drum sounds. Sounds cover the standard drum kit including kick, snare, hi-hats, crash and toms. When the record button is clicked, the in-built metronome starts ticking to the selected tempo. There are two lead-in bars before recording actually starts so that you can get into the rhythm. The drum sounds are then played and will be recorded.

If it is beyond your capability to play multiple instruments at the same time, do not despair. One instrument at a time can be played and overdubbed onto previously recorded sounds. That way, a complex drum part can be built up easily.

If you can't keep to the timing, Funlab will optionally "quantise" the notes you have played. That is the notes will be shifted automatically in time to the nearest beat resolution, which you can specify. For example, if the song you are recording uses a minimum of an eighth note (two notes to every tick of the metronome), then quantisation resolution should be set to eighth notes, and your timing will be accurate to the eighth note.

Once the drum part is recorded, we can now proceed to the bass part. This time, various bass sounds can be selected by simply clicking in the sound window for the bass track. When the record button is clicked, and after the two lead in bars, the recorded drum part will play as well (but can be muted if desired). So the bass part can be recorded in time with the drums.

By proceeding similarly, we can easily select the right sounds for the Chord track, and the two melody tracks, and record each track sequentially. If a particular section of the recording is unsatis-

factory, the "Punch-in" feature allows selected sections defined in bars to be re-recorded without affecting the rest of the song.

When all tracks are recorded, it is then easy to experiment with different tempos, different sounds for each track, and also different volume mixes. This is the advantage of a computer based MIDI system over conventional tape based recording systems.

Once songs are recorded, they can be displayed in standard music notation. From this screen, the song can also be played, and the score will scroll in time. The notations are accurate and can be educational for the music student.

Songs can of course be stored to disk, and a "Music Dictionary" feature enables songs and associated parameters to be catalogued. There is also a search feature where partial titles can be entered and matching songs are displayed.

Sound Editor

The Funlab software's Sound Editor feature also provides the ability to graphically change the characteristics of the sounds. Each preset sound in the FS680 keyboard is a combination of two sound envelopes, and using the Sound Editor, the shape of the envelopes and their relative volumes can be altered with the mouse. This allows a lot of experimentation in sound creation, and the results can either be stored in the FS680's five user sound locations, or on disk, where there is no limit to the number of different sounds.

All in all, the Funlab Music System provides a very good introduction to the world of MIDI recording studios. It is an ideal extension to the Amiga, and provides a much more creative use than simply playing games. The software was especially written for the Amiga by one of the major music software houses. Steinberg actually created the Cubase sequencing software for the Atari, and Pro-24 for the C64 and Amiga, both professional quality packages. The software is not designed for the professional musician, but it has more than enough features for the novice MIDI musician to get started with.

The FS680 keyboard is state-of-the-art in portable keyboards, and the software combination with the Amiga makes it ideal for families. Everything required outside of the Amiga and monitor is included. Even the batteries are supplied. At under \$1,000 retail, it is indeed very good value for money. □

The Big Guns Excellence! WYSIWYG ProWrite Pen Pal Showdown

by Andrew Farrell

New arrivals on the Amiga WYSIWYG wordprocessing scene would have to meet a long list of features to match the latest upgrades to the big guns. *Excellence!* version 2.0 has arrived, and *ProWrite* 3.0 is out. *Pen Pal*, the newest market entry arriving late 1989, remains unchanged since its PAL upgrade.

How do these three popular wordprocessing machines compare, feature for feature? From the dot-matrix printer the results churn out, and often it is this criteria by which products are judged. Of course, how easily you can obtain the end copy is just as important. So let's examine both these areas now in our head to head wordprocessing comparison of the three WYSIWYG big guns.

What you get

Off the shelf, *Excellence!* looks every bit the heavyweight it is. *ProWrite* has a slick, sophisticated marble print on the box which gives the feeling of quality and class. *Pen Pal* dazzles with an array of documents containing graphics and fonts which make it look like one very powerful wordprocessing vehicle.

Inside the box, things begin to change.

Pen Pal has an excellent ringbound manual, not far short of an inch thick. The layout is easy to follow, with plenty of examples, and easy to locate chapter headings on the pages' right margin. The *ProWrite* manual is a little smaller, has fewer graphics and is not as well referenced. *Excellence!*, being a bookshelf package, is documented in a three ring binder, with protruding chapter headings for speedy location of subjects.

In practice a three ring binder can be tricky to handle. Pictures liven up the ex-

planations. Probably the only major criticism in the documentation department would have to be levied at *Excellence!* which, after so many upgrades and alterations, seems to suffer a little from incontinuity.

Pen Pal and *ProWrite* come on two disks, and *Excellence!* on three. Version 2.0 of *Excellence!* is also available as an upgrade which includes three new disks and a manual addendum. It is easy to see the advantage of the three ring binder when you can make an upgrade so easily, however it is a shame that instead of replacing the pages which needed altering, Micro System Software have opted to have you refer to the Addendum for changes or make the alterations by hand.

Installation

If you have a hard disk, your wordprocessors may need to be installed. Apart from actually copying the various files and directories from the original disks, you normally need to install drivers, fonts and alter your startup sequence.

New Horizons, the publishers of *ProWrite* need to be congratulated for keeping installation simple and improving on support for font and printer driver installation. To place *ProWrite* on your hard drive, you simply move the program, dictionary and thesaurus icons to the appropriate drawer. As long as all three are in the same drawer all will work fine. Now that is how it should be. Extra fonts, and printer drivers are handled using a simple utility provided on the system disk called System Mover. Commodore should have included this program as part of Workbench.

Excellence! has gone to the other extreme. An install program is provided to automatically place the relevant files and

fonts in the right place. Although gadget and requestor driven, so much power is offered that first time users are likely to be over-awed by the path names and file titles which can be edited. If you know what you're doing, this type of install program is great. If not, it can be a giant hassle. The manual only confuses the issues further with convoluted explanations and garble about device names.

Pen Pal is a bit clearer than *Excellence!*, but still requires the user to understand device and AmigaDOS. This type of information can easily be passed to an install program in the fashion used by Gold Disk with *Professional Page*. They have arranged matters so that you simply click once on the install program and then with the shift key held down, double click on the hard disk drawer you wish the program to be installed in. Much simpler.

Hardware requirements

We found all three wordprocessors required one megabyte of RAM to run peacefully. You may get them to work in less, but not reliably.

Excellence! is no longer available in a 512K version, and the manuals all recommend one megabyte.

Pen Pal uses the most RAM (about 600K depending on the buffer size you select), followed by *Excellence!* (around 500K) and then *ProWrite* (350K).

You'll need at least two floppy drives or one floppy and a hard drive. As the *ProWrite* manual puts it, "we strongly recommend you also have a printer." We reckon you'd figured that one out.

We tested all three wordprocessors on a 68030 based system and found that *Pen Pal* seemed to hang every so often. *Pen Pal* was also a little unstable on the 68000 based Amigas. *Excellence!* has the occasional problem, and *ProWrite* seemed to behave itself the most, with little or no hassles reported.

User interface

All three user interfaces are gadget and menu driven.

Pen Pal has a large number of tools for adding boxes, lines and other decorations to your documents. It also has a unique active pointer which changes to indicate the function of the gadget currently pointed at. However, *Pen Pal* also lacks a few basics which the others have such as selecting justification from the

ruler - both *ProWrite* and *Excellence!* make quick work of adjusting the setting of a particular highlighted area whereas *Pen Pal* requires you to enter the pull down menu system.

Pen Pal was also less intuitive in a few other basic functions, but made up for this in things like margin settings, where the margin can literally be dragged into place using the mouse.

ProWrite has a clean easy to follow more professional look. *Excellence!* is also fairly sharp, with version 2.0 having a number of user interface improvements including very speedy pull down menus. *ProWrite* is also fast, with *Pen Pal* clocking the slowest pull-down speeds.

Keyboard short cuts make editing much smoother. All three programs have short cuts for most edit and style functions, basic file and search or summary operations. Important to all wordprocessor users is the speed at which you can edit, and the amount of support for moving about a document. All three programs have the standard Amiga slide bars, sizing tool and scroll arrows - although *Pen Pal's* screen looks a lot more exotic, using its own variation on the usual clean look. This deviation will therefore not support Workbench 2.0 enhancements, and leads one to wondering what else they may have circumnavigated for the sake of uniqueness.

Highlighting a block of text using the mouse is fast in all three packages. Double clicking a word will high-light the word in all three, and clicking a third time will select a line or paragraph in *Pen Pal* and *ProWrite* respectively. Of course, to become truly proficient, keyboard editing needs to be available to move around your document by word, paragraph and sentence. *Excellence!* supports movement by character, word, line, window and document. *Pen Pal* handles all that bar the window movement with the addition of sentence and paragraph jumping - very sensible. *ProWrite* handles all but paragraph movement.

Speedwise, all are fast, with *Pen Pal* dragging the chain a little. *ProWrite* 3.0 and *Excellence!* 2.0 are vastly improved in this area. They are now both good enough for even the fastest typist to use comfortably.

Document and file requestors

ProWrite enables eight documents to be open ready for editing. *Pen Pal* offered four and *Excellence!* six. In each case the new document was stacked down the screen enabling access to previous grab bars. A new ruler was always opened too. Obviously, the limitation of open documents may vary depending on available memory and the contents of each document.

The *Excellence!* file requestor displays directories and then files in a sorted list. You can cycle through the various volumes and four different file extensions are handled. The requestor cannot be moved around the screen once open on all but .

Pen Pal has a very unusual requestor, divided up with lines and boxes all over the place. Two internal file extensions are handled as well as a no-extension file option. Directories and files are sorted as a single list. The best feature is that a list of all mounted devices appears which you can click on to select a drive - the other packages insist you cycle through each available device - painfully slow on a floppy based system - and it is easy to shoot past the device you want on a hard disk based set up.

ProWrite divides the whole display up best, and is proba-

Feature Guide	Excellence!	Pen Pal	ProWrite
WYSIWYG			
Supports Amiga Bit-mapped Fonts	Yes	Yes	Yes
Displays NLQ Equivalent in true proportions	Topaz 11	unknown	Yes
Include IFF Graphics in Documents	Yes	Yes	Yes
DISPLAY			
Maximum and Minimum Colours	2,4, or 8	8	8
Interlace mode supported	Yes	Yes	Yes
EDITING			
Maximum Open Documents	Memory Limited	4	10
Undo option	Yes	Yes	Yes
Revert to Last Saved	Yes	Yes	No
Keyboard Short-Cuts	Yes	Yes	Yes
Macro Keys	Yes	No	Using AREXX
FONTS			
Number supported	250	200	unknown
Maximum Size	-	-	-
Colour Support	No	Yes	No
OUTPUT			
Preview Mode	Yes	No	No
NLQ + Graphics	Yes	Yes	Yes
Postscript	Yes	No	Optional
Landscape or Portrait	Yes	No	Yes
Print Merge	Yes	No	Yes
Mail Merge	Yes	Yes	Yes
FORMATTING			
Headers	Yes	Yes	Yes
Footers	Yes	Yes	Yes
Footnotes	Yes	No	No
Columns	4	0	5
Flow	Parallel	N/a	Parallel/ Snaking
TEXT			
Superscripts	Yes	Yes	Yes
Subscripts	Yes	Yes	Yes
Variable Line Spacing	Yes	1,2 or 1 1/2	Yes
Date & Time Stamp	Yes	Date	Yes
Hyphenation	Yes	No	Yes
GRAPHICS			
IFF	Yes	Yes	Yes
HAM	No	Yes	Yes
Scaling	Yes	Yes	Yes
Auto-Flow Around	Yes - One Line	Yes - FULL	No
Ragged Left or Right	No	Yes	Yes - Manual
SPELL CHECKER			
	140,000 words	100,000 words	100,000 words
As you type	Yes	No	Yes
User Defined	Yes	Yes	Yes
THESAURUS			
	1.4 Million Wd	No	300,000 Word
GRAMMAR or STYLE ANALYSIS / SUMMARY AREXX			
	Yes - FULL	Summary	Summary
	No	No	Yes
SPECIAL FEATURES			
Glossary Function Keys	Yes	No	No
Generate Index or Contents	Yes	No	No
Forms with Fill In	No	Yes	No
Paragraph Sorting	Yes	Yes	Yes

Wordprocessing

bly the simplest to use requestor for the beginner. *Excellence!* is more powerful and best for the more advanced user.

Setting up your page

This is a vital part of using your wordprocessor. Wrong settings can mean your page will not print correctly, will not fit on the page, or may creep up or down a line or more over multiple pages.

ProWrite and *Excellence!* have a single menu for page setup with *Excellence!* offering the most control. In both packages you can also select up to five columns and with an editable gutter width between them all - ideal for newsletters! *Pen Pal* does not offer columns. Margins are set using on screen gadgets.

All three programs handle headers and footers, with *Excellence!* also offering footnotes. *Pen Pal* has the easiest editing of these areas - you just click above the top header margin and start typing. The other two use a select view option to select which area you edit.

Fonts

All three program handle any Amiga bit-mapped font. *ProWrite* will also work with its own special screen fonts designed to look exactly like the variations on most in-built NLQ printer fonts which are available. *Excellence!* sticks to Topaz 11 for NLQ work, however it has full support for Postscript output - something which *ProWrite* only offers as a separate option which then cuts out a lot of other useful formatting facilities. Although *Excellence!* included Postscript fonts look horrible, you can also use the Adobe or Gold Disk metric fonts. A small conversion utility facilitates this, and the results are fantastic, making *Excellence!* the only full Postscript wordprocessor on the Amiga.

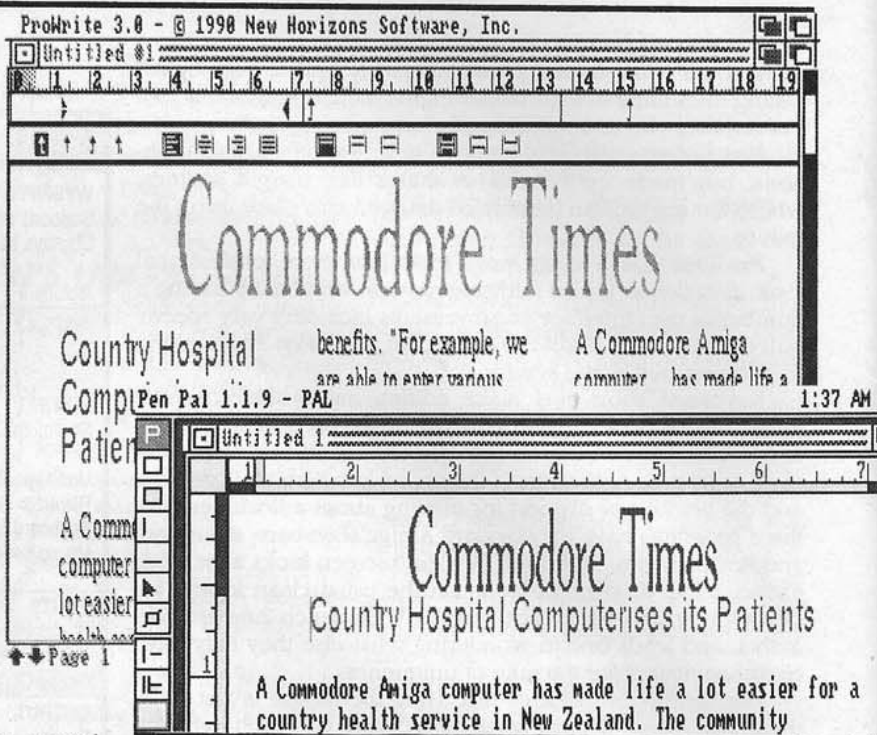
Excellence! displays all its fonts as one giant list. This can become cumbersome if you have hundreds of fonts on your systems - like I did. The maximum number of accessible fonts is limited by the most options which may be displayed in a pull down menu (250 including point size). This can mean that not all the fonts listed in the pull-down are accessible - however this is only a problem in extreme situations. The trick is to isolate fonts you wish to use in *Excellence!* and put these in a separate directory which you assigns FONTS: to before using *Excellence!*. If you alter the Adobe or Gold Disk metric files you'll need to do this anyhow.

Pen Pal (up to 200 fonts) and *ProWrite* access their fonts using a requestor like a file requestor. This method is a little slower - although with *ProWrite*'s font short-cut it is quite intuitive.

Graphics

Support for IFF graphics varies immensely. *Pen Pal* offers the world, whereas *ProWrite* barely scrapes through. *Excellence!* gets by with a half way effort - which is enough to make it usable. Best results in printing graphics require the right kind of graphics - if you're printing black and white, use black and white images.

Pen Pal converts IFFs to a display format that is supposed to be close to what the end result will look like. Text can be made to flow left or right around the graphic, with either



ragged or straight margins. Graphics may be sized and positioned easily. Overall, if graphics are high on your list, *Pen Pal* wins by a long mile.

Excellence! will allow only one line of text next to a graphic. The image may be sized. The one line flow around is automatic. In *ProWrite*, things get really bad. In essence, you've got to make text go around the graphics using TABs and margin settings - very clumsy. So, whilst this takes a lot more work, the end result can end up as good as *Pen Pal*.

Spelling/thesaurus

Excellence! is king of the spellchecking world. It has a 140,000 word spellchecker and 1.4 million word thesaurus. *ProWrite* is close behind with a 100,000 word dictionary and 300,000 thesaurus cross-references. *Pen Pal* does not have a thesaurus, but has a 100,000 word spelling checker.

All three programs handle both phonetic and transposed spelling problems, although *Pen Pal* does require an extra step to reach the amended word.

In the thesaurus department the gap is a lot wider. Although *ProWrite* offers a very long list of synonyms, divided into grammatical areas, *Excellence!* provides a full explanation of the word, along with a long list of synonyms and antonyms - a real educational program! Furthermore, *Excellence!* offers complete grammar and style analysis too - the complete writer's tool.

Printing

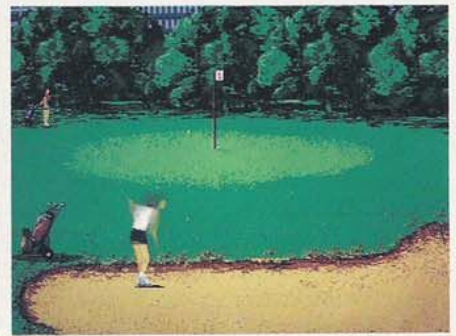
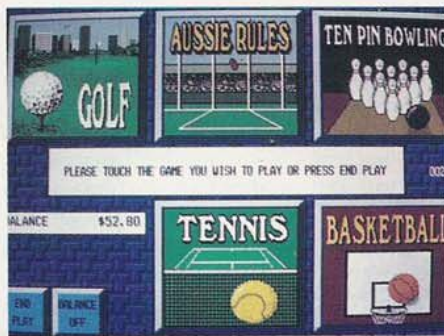
I tried producing a simple three column newsletter on each wordprocessor. *Pen Pal* stopped dead a few times, and couldn't handle the three columns, although the extra graphics made for a few impressive pages. *Excellence!* and *ProWrite* were both on a par, both handling multiple columns, placing the newsletter titles as large as required in the header and printing out comparative results at the end of the day.

Excellence! was able to go the step further to Postscript

Amiga puts TAB lengths ahead.

The latest in Amiga computer technology has helped the Victorian TAB to introduce Tabaret, a revolutionary gambling concept. Amigas were chosen as the player terminal processors because of their outstanding multi-tasking, graphics and superior sound capabilities. Amiga congratulates Tabaret and wishes them all the success they deserve. You, too, can have your own success by getting into the amazing Amiga now. Over 2 million Amigas have been sold worldwide. The latest and most dramatic evolution of the established Amiga design is the Amiga 3000. For digital stereo and multimedia performance, the 3000 sets new standards of videographics handling. Both can drive your home, office or business. Both are sensational.

Amiga graphics like these are making Tabaret a success.




Commodore
AMIGA

output, and offers superior features in areas such as generating index and contents lists automatically. With a little trial and error most print problems were overcome, although there seemed to be some bizarre solutions to some of the problems we ran into.

Summary

All three wordprocessors would make their owner very happy. For solid text preparation I would tend to recommend a combination of *Transcript* and a desktop publishing program for final output. However, where formatting is important, and the extra editing facilities of *Excellence!* would come in handy, it stands alone as the heavyweight all-round wordprocessor.

For a cheaper solution to the same requirements, with a pleasing look and feel and absolutely rock solid reliability, *ProWrite* is the answer.

If you're trying to produce a graphics orientated publication in colour. *Pen Pal* has a lot to offer - but it is a little unstable and somewhat cumbersome over some menu areas. For an extra \$100 you could buy *Pagestream 2.0* and enjoy far more sophisticated graphics and much better quality output. There are a few nice redeeming features, such as the in-built list manager, form editing capabilities and colour font support. These features are useful, and make *Pen Pal* good value for money.

So, it's up to you. To help you decide better, we've prepared an exhaustive comparison chart. □

Concepts of Wordprocessing

MORE POWER to more people. It's a fact. More people buy a home computer which, apart from games, is used more for wordprocessing than any other single application.

Some fourteen years since the original "Electric Pencil" wordprocessor was created, there is a plethora of choices to edit, paste and print your prose.

Modern wordprocessors offer much more than the archaic line editing of earlier models. They all offer writers the advantage of creating, altering and printing text more easily than any other fashion. Some provide spelling, grammar and style analysis. Others cross over into the world of publishing, with powerful layout tools, graphics and colour.

To the new user, wordprocessing can be a terrifying experience. Hours spent hammering in hard thought out text can be lost in an instant of absent minded keystrokes. Understanding how to make the wordprocessor work and work reliably turns it into a powerful tool that rarely turns on its master.

Concepts

WORD WRAP : This is where text editors and wordprocessors are a world apart. Wordprocessors help you with formatting, text editors, of which there are many for the Amiga, offer very little in this area.

The most elementary formatting function is automatic wordwrap or wraparound. It relieves you of the chore of pressing the carriage return key at the

end of each line.

Here are few more terms and concepts you'll run into when examining the pros and cons of each available package:

FONTS: Because the Amiga has a bit-mapped screen, it can represent letters in myriad shapes. You can therefore write in a variety of fonts - airy, block like, tendriled, even Gothic. A font is a kind of design and may even be copyrighted...which makes it more fun to use.

JUSTIFICATION: Text can be made to align either to the left or right of the page - or both, or neither. Thus you can create the same look as a newspaper article, or the white space filled feel of a business annual.

Centre justification simply centres every line and saves you the trouble of counting characters when typing titles and other heads.

MARGINS: Yes, they can set your margins and keep them there, so you will never have the problem of bell-bottom text - with one inch margins at the top and quarter-inch margins at the bottom. Moreover you can set them before writing and alter them at any time afterward.

PAGING: Word processors can wrap around from one page to the next. Instead of removing a sheet of bond, threading in another and adjusting it to the horizontal you can continue writing and maintain your train of thought. The software silently shifts you to the next page and often automatically numbers it.

PRINT REPLICATION: Because the screen is bit-mapped, you can print out exactly what you see on it. This feature frees you forever from the bare, sticklike font of the typewriter and lets you undertake print shop tasks like creating quality letterhead. Opportunity as well, to write in various type sizes.

Many word processors let you choose from the tiny 9 point through 12, 14, 18, 24, 36, all the way up to the grand 72 point size. Others let you expand or condense your print to any size in between. On guard though, for poor letter quality at the larger sizes, where some programs render curves with pronounced steps.

STYLES: The Amiga can also display styles of type such as italic, boldface, or outline. Styles differ from fonts. Fonts are the fundamental character patterns and involve features like the presence or absence of serifs. Fonts are not generalisable, that is, they don't interact with other fonts. Styles do. They are the means of playing with fonts, as by slanting or thickening them.

SPELLING CHECKERS: A spelling checker examines each word you type, compares it against the words in the dictionary, and flags it if it isn't recognised. It thus catches not just ordinary misspellings, but typos as well, though it won't notice mistakes which substitute one for another legitimate word, like affect for effect. A good word processor dictionary can have as many as 100,000 words. □

REAL Wordprocessing

If you don't need all the fancy footwork offered by the wysiwyg bigwigs, it's time to stick to the tried and tested text based programs. Here's a selection to tempt your return keys on.

Platinum Scribble!

Platinum Scribble! is a fast text based wordprocessor. Editing text is handled on one screen, whilst a preview option lets you see how the document will look when printed out. Boldface, italics, underlining, subscripts and superscripts are all shown. You can quickly fix up any mistakes before pressing the print but-

ton.

I found *Platinum Scribble!* extremely user-friendly with its pull-down menus, and point and click operations. There are keyboard alternatives (using both Amiga keys) for most of the features offered on the menus. Scrolling up and down the text is both fast and smooth, and there are keyboard commands to quickly move the cursor around the screen and go to the start or end of your document.

A full list of commands is displayed if you press F1. The manual is very easy to read and lists all the functions and commands as well as explaining everything simply. The whole thing comes in a small three ring binder which will lie flat on the desk.

One novel feature is the way the pointer changes to reflect the currently selected mode of operation. For instance, to cut a piece of text for pasting elsewhere into the document - mouse selectable from a pull down menu or you may use Right Amiga and X - you get a pointer like a pair of scissors. Move this over the text whilst holding the Left Mouse Button. When you have high-

lighted all the text to Cut, release the button and the text is taken out of the document and held in computer memory. Select paste (or use Right Amiga and V) and the pointer changes to a tube of paste. Move this to where you want the text to go and press the Left Mouse Button to recall it from memory and insert it. Other options have similar such pointers making it easy to get started.

With Overwrite you can simply type over anything else you may have written, whilst in Insert mode the text will open up at the cursor position to accommodate the additions.

When you boot up the program it comes up with existing default settings such as: Line & Page length - Left, Right, Top and Bottom margins - preset screen colours etc etc, and you have options to change and resave all these for your own use. There are two ways to change the defaults, one by using the pull down menus and typing new values into the requester that comes up, and the other by using a system of *dot commands*.

There's a good find and replace function. *Scribble* supports Headers and Footers, justified to the left or right or centered. The Mail Merge option is handy for direct mail-outs for business to help personalise letters. There's a very good Spell Checker (104,000+ words) and Thesaurus (470,000+ words) built into *Platinum Scribble!* and if you have enough RAM - I have 1.5 mb and still had around 77,000 free memory showing when I did this - it's best to load them into RAM. You may even have the program check your spelling as you write, in which case the screen will flash and you'll hear a *beep* if you type a word wrong.

Many word processors are capable of inserting graphics into the text and *Platinum Scribble!* is no exception. It does it rather differently though, using the "dot" command ".IP".

A word about printers, in the unlikely event that your printer isn't supported by AmigaDOS Preferences there are special provisions in *Platinum Scribble!* to allow you to bypass AmigaDOS printer drivers. You can use the printer variables in your printer's manual to set up your own printer control values and send the data to the logical device PAR: (or SER: if that's what your printer uses). What this means is that you won't be able to use the onscreen Styling attributes but will use *embedded* commands via the "Print GO" function. Once again, it's explained clearly enough.

Overall, a fine program used happily by many Amiga users.

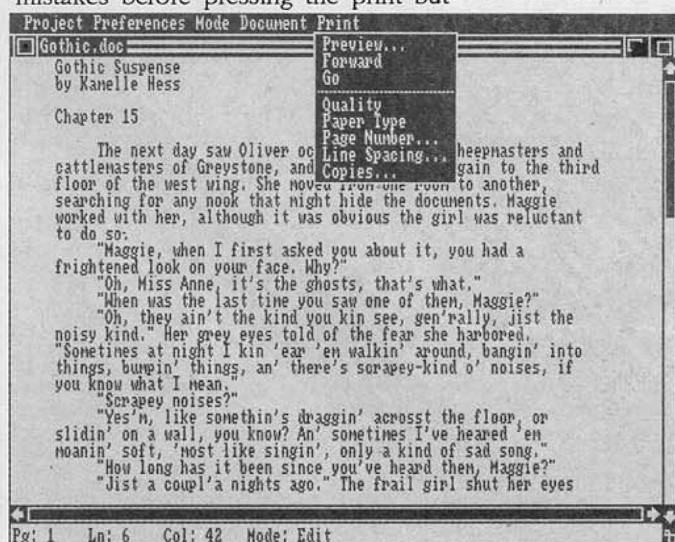
Eric Holroyd

RRP \$89.95
Computermate Products
(02)457-8388

Transcript

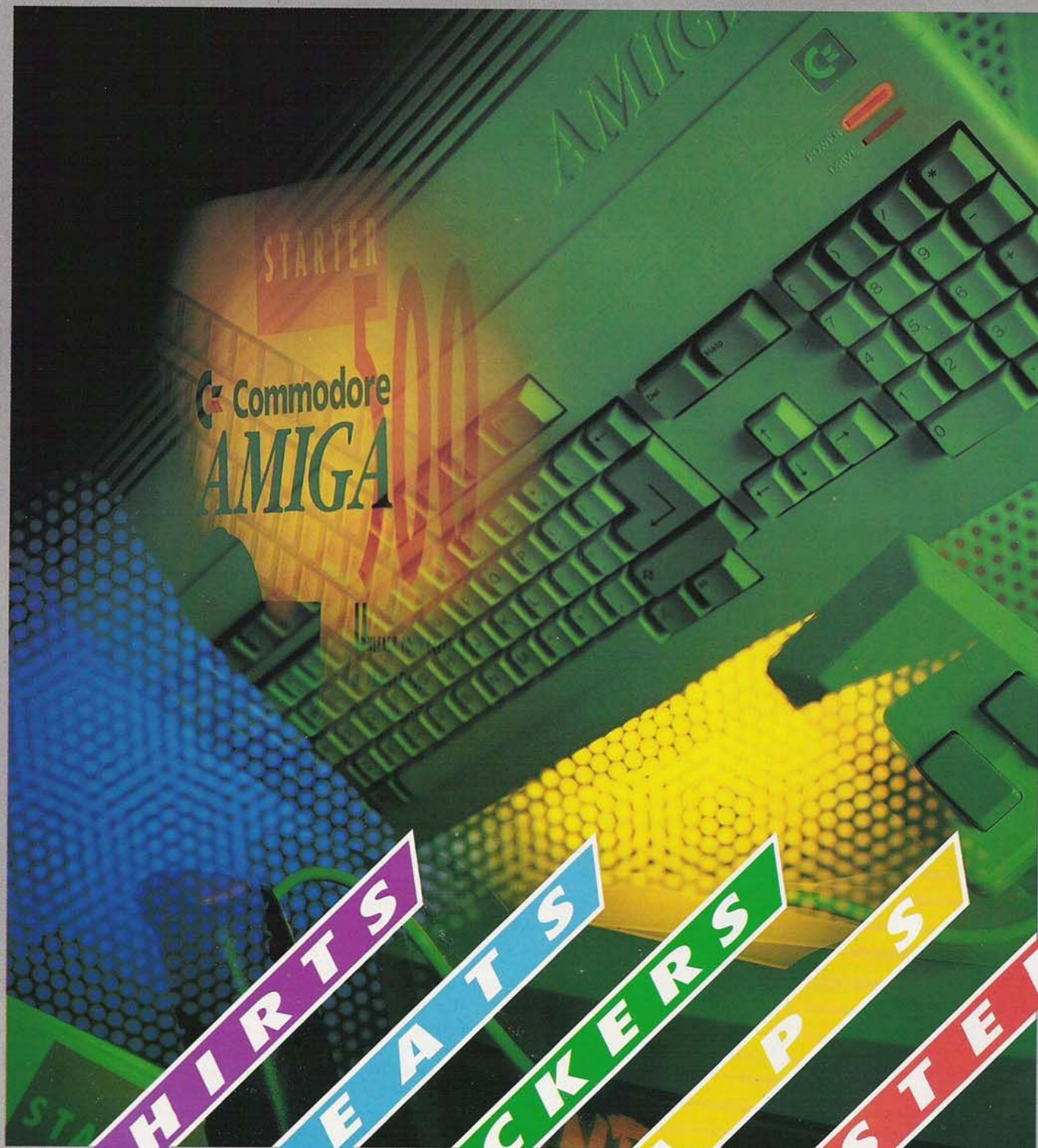
Transcript offers a high speed, rea-

Continued on p50



AMIGA

G E A R



T SHIRTS

SWEATS

STICKERS

CAPS

POSTER

AMIGA

G E A R

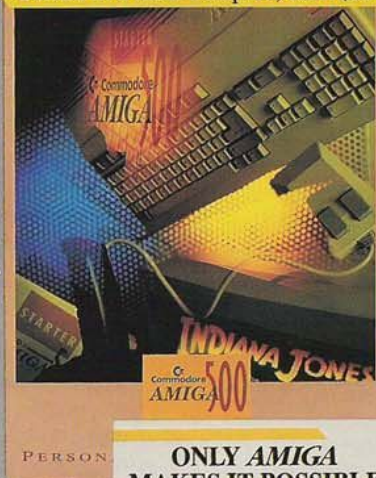
PRIVATE COLLECTION

SWEAT: 100% Cotton with fleecy brushed inside. White with Amiga name on front, full colour print on the back. Washable. M/L/XL. Postpaid, each \$30.



CAPS: U.S. Style peaked cap. In washable yellow cotton with Amiga insignia front. Adjusts to fit all head sizes. Postpaid, each \$12.50.

POSTER: Classic Amiga poster printed full colour on heavy art paper. Ideal for wall or ceiling mounting. 762mm x 506mm. Comes in a tube. Postpaid, each \$5.



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STICK IT! : New Amiga stickers. Self-adhesive vinyl. Goes on your board, bumper, case or anywhere. Postpaid, \$2.50 per set.



T's: 100% cotton baggy T shirt. White, with Amiga name on front, full colour print on back. Washable. Sizes M-L-XL. Postpaid, each \$20.

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As well, you'll be helping some less fortunate kids, because 10% goes to the Autistic Association. Like the man says, only Amiga makes it possible. This is just the start - get into it !

USE THIS ORDER FORM

TO: Amiga Gear, C/- The Mailing House, P.O.Box 663, Artarmon NSW 2064.

Here's my order.

This is the Amiga Gear I want.....

Please PRINT all details clearly !

ITEM	SIZE	QTY	COST
AMIGA CAP (adjustable) \$12.50	—		
AMIGA SWEAT (M/L/XL) \$30.00			
AMIGA BAGGY T (M/L/XL) \$20.00			
AMIGA POSTER (762mm x 506mm) \$5.00	—		
AMIGA STICKER (297mm x 210mm) \$2.50	—		
(All items are postpaid)			TOTAL \$

**\$60
SPECIAL
DEAL:**

If you buy one of each (normally \$70) tick here and all you need to send us is \$60! ☐

NAME _____

ADDRESS _____

_____ P/Code _____

Payment by: ☐ Cheque ☐ MO ☐ Credit Card

CREDIT CARD DETAILS

☐ Bankcard ☐ Visa ☐ Master ☐ American Express

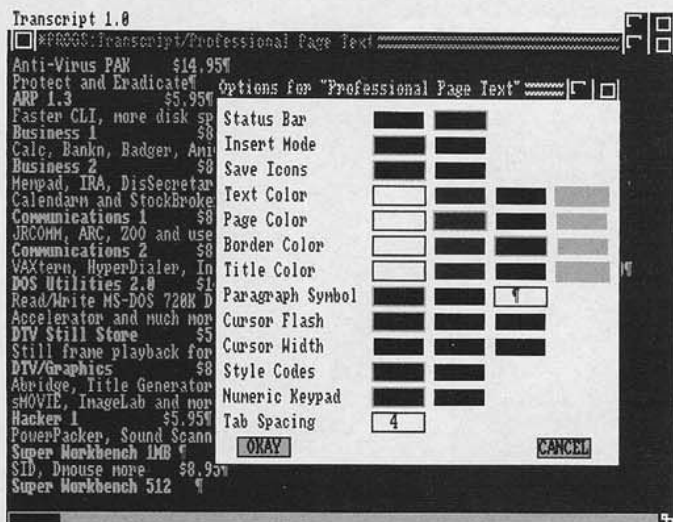
Card No:

Expiry Date: _____

Name of card holder: _____

Signature of card holder: _____

**10%
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Transcript

sonably powerful wordprocessing environment suitable for large documents, or short notes. The program is very popular amongst professional writers for its easy editing capabilities, good search and replace options and ability to have several documents open at one time. *Transcript* also appears as *Write* in the new *Gold Disk Office* compilation.

Formatting of text is handled by embedded codes which do not affect the text layout until it is printed or previewed to screen. This may sound archaic, but in practice it is quite functional, as many *EasyScript* users from Commodore 64 days will attest. It doesn't slow down editing, the more important process.

Furthermore, *Transcript* offers the ability to work very closely with *PageSetter*, *Page* or *Professional Page*. Formatting codes from these desktop publishing codes may be included in your document. A menu options allows you to hide these during editing, or reveal them for alteration. If you have one of the aforementioned desktop publishing programs running, you can export to *Transcript* on the fly using a single key press. The formatting codes remain intact. The text can then be edited and return home to the program which sent it, once again with all layout codes intact. A very powerful, sophisticated use of multitasking which makes the job of editing text already in page layout a absolute dream.

Although short on fancy looks, *Transcript* still has plenty of power. It can automatically generate an index to a document from tagged key words. Mail merges can be performed and there is a

powerful Macro function. For writers, there's also a vital word count option. The spelling checker works reasonably well, although the dictionary is very American. You can create your own user dictionary, but this is not automatic - new words cannot be added on the fly. There's no thesaurus.

Many editing and screen options can be altered and the majority can be set in the program's

TOOLTYPES from workbench. You can move around your document by word, paragraph, document or screen. Highlighting text to be edited, or copied, is super fast. The editing facilities are amongst the best around on the Amiga today.

The clipboard is not supported from *Transcript* - this is a real mistake! However, the document compatibility level is high. *Transcript* can get away with importing most document types without crashing - binary characters are stripped if they are undisplayable - however you may be left with lots of bizarre ASCII characters throughout your text. Almost any wordprocessor will load a *Transcript* document, although the formatting codes will have no effect. *Transcript* can run on Workbench or its own custom screen in interlace or normal display modes. The colours are fully definable.

Documentation is excellent. There are tips on conserving memory and plenty of real information on using the product fully. *Transcript* is for text based output - no fancy graphics, pretty fonts or funny columns. You can tell *Transcript* to use your printer's pretty fonts - but *Transcript* really comes into its own when used with *Page*. Together, they're a real team. Justifiably they could be called integrated. □

Distributed by:
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RRP \$89

TextPro

TextPro offers a number of unusual features at a budget price. If you have been searching everywhere for a word-

processor that automatically hyphenates, helps you to format C-language source code, as well as allowing you to insert IFF format graphics in your text, then "this one's made for you."

But let's look first at *TextPro* as a simple wordprocessor. On loading the program, the first thing you will notice is that the usual system font is not used. Diamond 10 is the replacement font - one of the system fonts that I like least. But that's just a personal preference.

Editing follows most of the usual point and click traditions of the Amiga, with a few minor exceptions. All operations can be selected by pulling down menus at the top of the screen - File, Edit, Style and Formatting menus are provided.

Editing functions are generally line and paragraph based - in other words, values selected are operative only within the specific line or paragraph for which they are activated. There are some good reasons for taking this approach. I just can't think of any.

In fact, it's a real pain in the neck. Each paragraph must be individually formatted, and any changes can have a dramatic effect. At times formatting becomes scrambled, and it is necessary to press the *Help* key to reformat the entire document. At least it's fast.

Text enhancements work on a similar basis - underlining, italicising and bold facing only work one line at a time. Thus, if you want to italicise a sentence that extends from one line to another, you will need to highlight the area on each line individually.

Having got that off my chest, let's be positive for a while. Where, for example, have you ever seen a wordprocessor that lets daisy wheel owners with a two colour ribbon specify text to be printed in red? It's here, and it even prints the red sections in colour on the screen. Very impressive.

In fact, printing is what *TextPro* does best. I was immediately impressed with the range of printer files offered for selection at the start of the program. My Star NX 1000 was included just months after the printer was released in Australia - a pleasant surprise. To top it off, the manual goes into great detail about creating your own printer files, allowing you to customise the program for even the strangest printer in the world. This section of the manual made interesting reading, even though I didn't have to modify a file - it is probably the best explanation of the intricacies of printers

that I have yet found.

As I have already mentioned, graphics can be printed as an integral part of your documents; a simple Graphic Load command on the file menu imports any suitable IFF file with the correct suffix.

A neat utility called BTSnap is included, which allows you to take a snap shot of virtually any IFF graphic screen. The program sits in the background waiting to be activated at any time. Three Graphic print modes are supported - random shading, raster, and black and white. All three are subject to the age old problem of representing 4096 possible colours on a dot matrix printer with a single black ribbon.

Random shading made a pretty decent stab at things, but for professional results I suggest you use monochrome pictures - simple line drawings and diagrams would be a snap.

This feature in itself may make *Text-Pro* a worthwhile proposition for many buyers. While not quite a fully fledged desktop publishing system, it still has plenty to offer if you are putting together newsletters or other illustrated documents.

Other unusual features include the *C-Source Mode*. If you are a C-programmer - meaning, if you have rocks in your head, or a Spock-like brain - this option helps you write nicely indented and formatted code.

Auto-hyphenation is an unusual feature to find on a budget priced word processor. Using a set of grammatical rules, the program hyphenates long words automatically, and seems to pick suitable spots to do so. *Immediately*, for example, became *Immedia - tely*, which is fine. Sometimes, however, I tend to disagree with the program's idea of what constitutes a long word - four letter words split over two lines look a bit odd. But if you don't like the results, you can either turn Auto-Hyphenation off, or manually over-ride specific words.

Function keys can be redefined as text and command strings with a maximum length of 160 characters. 30 definitions can be stored using the function keys in combination with the SHIFT and ALT keys, making this a remarkably powerful feature. For a small mail merge operation, for example, you could easily assign a name and address to each of the 30 function keys - or you may like to reconfigure the whole command structure of the program, and operate everything with function key sequences.

TextPro is unusual. It offers much more than expected in most areas, but is constrained a little by clumsy editing and formatting functions in others. Even so, at a recommended retail price around the \$150 mark, the program is good value - especially if you are convinced that a picture is worth a thousand words. □

Distributed by:
Pactronics 02 748 4700
RRP \$99.00

Beckertext

Beckertext has a strong family resemblance to *TextPro* - in fact, they are closely related. Both were programmed by DataBecker, a German software house. *Beckertext* is the flagship, with a price to match.

Chief additions are the ability to generate Table of Contents and Index lists - good if you are writing a book - and an enhanced "Macro" feature, which lets you redefine the function keys to reproduce strings of commands or text that you commonly use. Text can be printed in columns, though you will need to do a fair bit of mathematics before you get it to work. Unfortunately, you have to calculate your own margin and column settings precisely, or strange things happen. However, it's worth getting right - the resulting output looks good.

Anyway, I guess you could use the program's built in mathematical functions to help you out. Calculations can be performed within the text - columns of figures can be added, subtracted, multiplied and divided - some other operations are included too. The manual gives detailed examples of invoicing operations, giving the impression that this could be a very useful business application. □

Phil Campbell

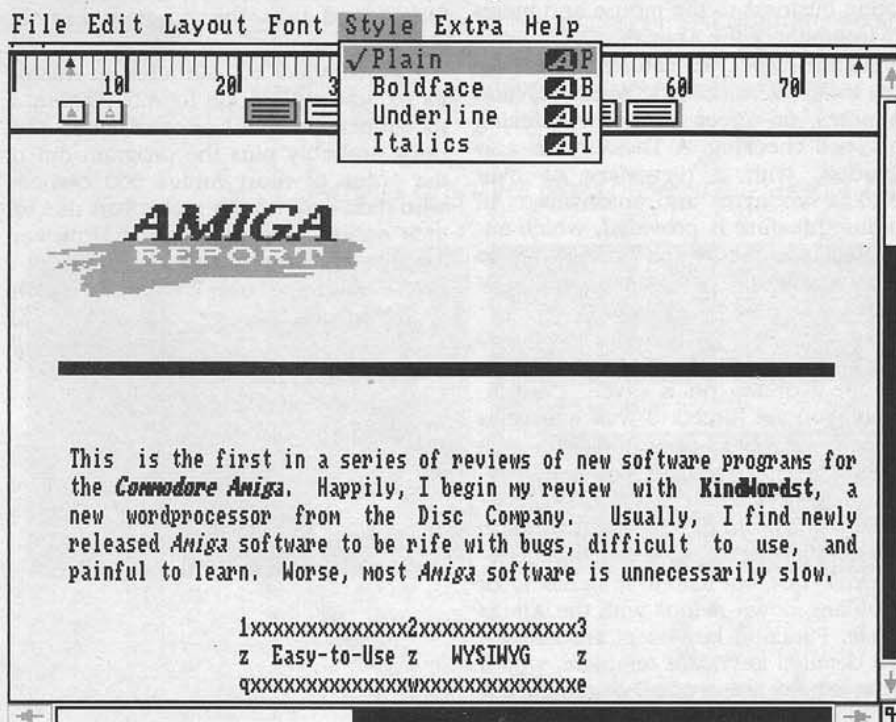
Distributed by:
Pactronics 02 748 4700
RRP \$149.00

Kindwords

Apart from the incredibly wimpish name, *KindWords* is a unique member of the Amiga wordprocessing family. There are a number of advanced features.

Graphics and text can be combined, in up to 16 colours. There are multiple font styles, with dramatic *Superfont* printing. Spellchecking and Mailmerge features are standard, and the program is easy to use. So it's just a matter of getting used to the name.

Program control is straightforward, with the typical Amiga mouse and menu system used to the full. However, every menu command has a keyboard equivalent, giving the best of both worlds. Many keyboard commands are now almost standardised, and *KindWords* does



Kindwords

not rock the boat. Press the left Amiga key with "S" to save, with "X" to cut - just like *Excellence!*

The *File* and *Edit* menus are pretty typical too - though the *Screen Colours* selector in the *file* menu lets you choose 4, 8 or 16 colours for the screen display. These determine how imported graphics will be displayed. Beware of the *undo typing* command in the *Edit* menu - I just undid half this review, and couldn't get it back.

The *Layout* menu is comprehensive - *Pagesize* and *Format* commands let you set all page variables, and there are presets for every imaginable page size, including our favourite A4. A pity some of the fancier programs didn't do likewise. Not mentioning any names, but frustrated *Excellence!* users may like to know that A4 paper is exactly 11.69 inches long.

The *Footer* function is unusually flexible. Up to 15 lines of text can be defined, giving plenty of room for essay footnotes and the like. The process is manual, but pretty easy - a window opens for the footer text, which you then treat as a separate document. This is a good compromise for those who don't need the fancy auto footnoting features of a program like the *Excellence!* or *WordPerfect*.

The *Font* menu is the strength of *KindWords*. Here at last is a program that means business in the printout department. Everybody knows that Amiga system fonts stink. And at last, somebody has done something about it. *KindWords* starts from scratch. No system fonts. Instead, a whole new printing system which gives ultra high resolution printout, from even the most humble dot matrix. This is genuine Near Letter Quality.

But now the bad news. Printing a page takes all day - four passes of the print-head are required for each line of text. And there are only three text fonts - Roman 8, 12 and 14. Not nearly enough. Besides, Roman 8 is too small, and Roman 14 is not really big enough. Okay - I'm a whinger. And I guess more fonts will be released on a separate disk. As long as it's soon.

Superfonts deserve to be taken seriously. In fact, Commodore should take a good hard look at the system, and include something similar in Workbench 1.4 - that's an order, guys. I know, 1.3 is a big improvement. But not nearly as good as this. In the meantime, if *KindWords* issue a few more fonts in decent point

sizes they will have a captive market. And even better, how about a Superfont Editor?

Pictures can be slipped into your document wherever you wish, as long as you don't want text in the same general area. I imported a 16 colour *Deluxe Paint* file with little trouble - the colours appeared on the screen just as they were in the original. Resizing is supposed to be easy. Unfortunately, the first time I tried it, everything else stopped. Permanently. Reboot time, and back to square one with my review. That's life.

KindWords sets new standards in output quality and flexibility - standards that should be followed by everyone else. Add a standard selection of word-processing features, and you get a better than average program. In summary, not many HarshWords for *KindWords*. Hmmm ... maybe I should rephrase that.

Phil Campbell

Distributor by:
Dataflow 331 5163
RRP \$99.95

Wordperfect

WordPerfect - arguably the most popular wordprocessor of all time in its IBM incarnation - was the first full-on all-singing all-dancing word cruncher to arrive on the Amiga scene. So how has it survived the transition from the world of boring business to the mouse and menu environment of the Amiga?

All the expected features are available, including automatic footnotes and endnotes, on-screen columns, indexing and spell checking. A Thesaurus is also included, with a dictionary of over 100,000 synonyms and antonyms. An outlining feature is provided, which automatically numbers and arranges up to seven levels of paragraphs and sub-points.

Timed document back-ups are also available - at pre-set intervals, the file you are working on is saved. Unfortunately, you are forced to wait while this happens - a missed opportunity for a bit of multi-tasking. Even so, you need never fear a power failure again.

Functions can be accessed through the standard IBM style keyboard sequences - fast, but hard to remember - or by pulling down menus with the Amiga mouse. Function key users are assisted by a detailed keyboard template, with a colour coded listing of all commands. A set of key-top stickers is also provided.

The *WordPerfect* Manual looks intim-

idating at first. Weighing in at 1.5 kilos, there are almost 600 pages of ringbound instructions to wade through. Don't panic. Things are not as bad as they look - the manual is divided into six smaller sections, in which a good deal of information is repeated. For example, the *Learning* section gives a step by step introduction to the program, while the *Reference* section sets out feature alphabetically. All in all, this is a top example of manualship.

On line help is also provided. At the press of the "HELP" key, the screen displays a message asking you to "Press any key for an alphabetical list of features." When a function key is pressed, the screen displays a list of all features controlled by the key. This system is very easy to use - the manual should spend most of its life on the shelf.

There are no fancy fonts, there is no provision for importing graphics - there is no attempt to pretend this is a desktop publishing program. Just a full-on word-processor.

And there is no doubt that *WordPerfect* is a professional performer. However, a few bugs remain. In some areas, the program is not very tolerant of user-stupidity - a few simple blunders have left me with no option but to reboot and start again. Some early problems were found with Amiga 1000 compatibility. By now, I trust they have been sorted out. One friend uses the program heavily, and has encountered no problems at all.

WordPerfect is distributed in Australia by Sourceware, ph 02 427 7999, at a recommended retail price of \$469. This price probably puts the program out of the range of most Amiga 500 owners, who didn't pay much more than this for their entire computer system. However, for a power user with an Amiga 2000, a hard disk and a bank balance to match, *WordPerfect* is a strong contender. □

Phil Campbell

Distributed by:
SourceWare 02 427 7999
RRP \$469.00

Phil Campbell's AMIGA Entertainment

Future games

Bigger, better, faster, brighter - what does the future hold in the world of Amiga entertainment? One thing's for sure - programmers will keep on pushing the boundaries further just so long as we keep paying them for their efforts. So what are the trends? What can we expect to see in 1991? And beyond?

Amiga CDTV

Perhaps the most significant news from the Commodore stable is the development of the Amiga CD-TV. The initials stand for *Commodore Dynamic Total Vision*, and the unit is simply an Amiga 500 with an integrated CD player. Or is it a CD player with an integrated Amiga 500? Either way, the whole is greater than the sum of the parts.

The CD-TV will be the ultimate multimedia machine - we're promised fantastic games and educational programs with live-action video backdrops and CD quality sound, encyclopedias and dictionaries with colour illustrations and sound samples - the possibilities are endless.

The unit will be styled like a standard home stereo component, and is designed to simply slot in to your existing home entertainment system. A 10 key infra-red controller lets you access all functions - no more mouse and keyboard, though these will be available as options. Naturally, the CD-TV will play your collection of audio CDs, so if you're wondering where it's going to fit in your stereo cabinet, the answer is simple. Throw out your old CD player, and stick the CD-TV in the gap.

The CD-TV was previewed at last year's Chicago Consumer Electronics Show to a warm reception. But what of software development? It's still too early

to say how many companies are getting in on the ground floor, but some early starters include Cinemaware with their interactive movies, and Lucasfilm. Imagine playing *Rocket Ranger* or *King Of Chicago* with full speech and stereo soundtrack and a live action video background! Hot stuff.

By the time the CD-TV hits the streets there should be around 100 titles available on CD, carrying recommended retail prices between US\$30 and \$100. Expect a range including games, encyclopedias, catalogues, Shakespeare's plays, the Bible, and - wait for it - even cookery books.

Amiga 3000 adds sophistication

The growing popularity of the Amiga 3000 will give rise to a new breed of games - games more sophisticated than ever before. The full 32 bit architecture of the machine, along with its redesigned custom chips, means that users can expect more bangs for their bucks. The A3000 can move bigger chunks of data faster and smoother than ever before. That means faster, smoother animation. It can recalculate 3-D graphic data at a cracking pace - and that means more realistic filled-vector displays with smoother contours and greater detail.

All this adds up to lots of potential. But will A-3000 users be interested in playing games? Why not? Everyone else is. Meanwhile, the rest of us will just have to look on with amazement - and a touch of envy.

Software for the rest of us

What about software? To my mind, the best development of 1990 was the introduction of *mixed-mode* graphics in a

number of games. In other words, rather than sticking to the rather stark "3-D vector" style, or the rather flat "bit-map" style, programmers are using both.

Games like *Wings* and *Sherman M4* have used the technique very powerfully, setting the main 3-D objects in worlds of finely detailed hills, valleys and clouds. The result? A quantum leap in the atmosphere and realism of the games.

3 - D Graphics

So what's next? For a start, 3-D graphics are here to stay. Objects defined by sets of geometric equations are much easier to move around the screen, and programmers are getting better and better at doing it. What we need is a little more speed, a little more detail, and some bright spark to come up with an easy way to map "textures" onto the surfaces of 3-D objects. Then we'll be flying planes and driving tanks in worlds that really look real!

The golden rule in entertainment software won't change. "Simple is best." The fact is, truly great games are always simple. Think back to the pure adrenalin pumping thrills of *Space Invaders* and *Pacman*. More recently there was *Tetris*. Simple stuff, but engrossing. There will be more of the same, and I for one am looking forward to games featuring *new ideas* even more than I'm looking forward to seeing new technology and techniques.

One final point. Times are tough. The economy is in a nosedive. Money is tight. So I guess many readers are planning to build up an even bigger collection of illegally *pirated* software.

Sure, you can save lots of money by copying games from your friends. But if the fragile software industry is going to survive and thrive in 1991, piracy has to stop. Companies that develop good software deserve your support, so play fair. That way, we'll all benefit in the end. □

Handy hints from A to Z

Welcome to our annual megasplurge of hints and tips. Crack your favourite game with these little gems - well, maybe they're not quite from A to Z, but almost! Remember, for best results follow the instructions carefully.

AFTERBURNER - Type **Together In Electric Dreams** and when playing the game, type **T** to reduce missiles, **G** to increase missiles, **<** to return to previous stage, **>** to advance a stage, and **I** to play a sampled sound.

ARCHIPELAGOS - Solve levels One and Two. Then press **RETURN** to select an Archipelago and type 8421 and press **RETURN**. Press **RETURN** again and you can select any Archipelago between 1 - 9999.

BATMAN THE MOVIE - To get infinite lives, type JAMMM on the BATMAN & JOKER title screen. On the fourth **M** the screen will flip upside down. Now start the game with infinite lives. Pressing **F10** changes to next level.

BEACH VOLLEY - During the game type in the words DADDY BRACEY. Now when you press **F1** you can skip to the next level.

CAPONE - To find the special bonus, go to the front of the Post Office. Shoot the ball at the top of the flag pole, and your score will go way up. If you shoot it again, you'll see a screen of the programmers! Shoot again and you'll be invincible, standing in the bank. At the end of that round, you will start at the beginning, except you'll be in warp speed.

COSMIC PIRATE - Here's help with a popular game that's just been released on a budget label. To get to the cheat mode, press the spacebar to pause. Now press full stop. A requestor box will appear. Type in 'GZAIMASEN' and there should be a sound effect to tell you cheat mode is operative. This will make you invincible. Once in cheat mode you can choose which spacetruck to attack by recalling the requestor and typing 'GIMMESHIPx' where x is mission 'A-Z'. This only works before entering the sector with the spacetruck!

DOGS OF WAR - Type **TIMBO** at the start of the game. Now when you press **F5** you will be indestructible.

DOMINATOR - Enter **SHAFT** on the high score table for infinite lives in the next game.

DRAGON'S LAIR - To enter Demo mode, which plays the game straight through, press **ESC R / L N 7** all at the same time, just after the credits finish loading. The screen will flash, then press the fire button and sit back and relax.

ENDURO RACER - Type in the word **CHEAT** after the countdown, then press the letter **T** if you want 10 extra seconds, press **S** to advance to level One or press **F** for turbo speed (210 kmh).

EXOLON - Type **AD ASTRA** on the highscore table and press **RETURN** for infinite lives.

F-16 COMBAT PILOT - If you're fed up with landing try the following: Jettison all fuel and weapons and climb to 65000ft. Stay there until the last of your fuel runs out. Dive towards the ground and at 10 or 11 thousand feet pull up hard. You will then be able to rise about 4000 ft and then start falling towards the ground. Just as you hit the ground the mission will end safely.

FAERY TALE -

One of the hardest things to overcome when first starting the game is how to avoid dying. Here's what you do. Make the crystal palace on the isle of sorcery your prime target with the first character, Julian. When you confront the good witch, click on ask. She will give you a good statue and a clue. Now keep clicking on ask: your luck (or lives) will rise from 20 to 65. This makes you impossible to kill. You can always return to the same spot and do the same if your lives run low.

GEMINI WING - Just before you're killed the fourth time, press the left

mouse button to bring up player two. Keep pressing the fire button until you're killed, and you will then re-appear at the bottom of the screen.

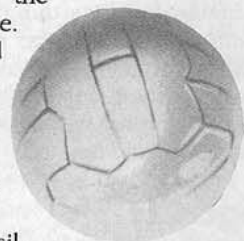
HOLLYWOOD POKER PRO - Hold down **H** and **F** at the same time for 100 free credits.

HOSTAGES - In the first stage, hide behind walls wherever you can, or in doorways if you are about to be spotted by a searchlight, as lying down or doing a roll isn't always effective. When placing your men around the top of the building, put them all on the same side - the best side is the bottom one. Now press **F1** which will show you the side where your men are placed.

Scan the top windows first for an empty room. You should see the men dangling from ropes, if not then you have got the wrong side.

You should send your first man in on the top floor. If all the windows have silhouettes, remember the hostages are slightly fatter than the highly trained terrorists. When your first man has entered a window on the top floor, clean the top floor of all terrorists (in green, hostages are blue - they also don't move around much).

When you have killed your first terrorist, position your gun where he once stood, so when you burst in on the next one, you don't have to mess about positioning your gun, but can shoot him



straight away. When the top floor is clear move your man to the top right room, (the one with only one door) and position him there with his back to the door. That way, when you have a hostage you can take him to this safe room.

Now bring another man in through the top floor. If there's a terrorist with a hostage behind him, DON'T SHOOT - you'll kill the hostage. Instead run straight into the room and straight at them. Don't stop! If you're quick enough, the hostage will follow you and the terrorist won't. Take him to the safe room upstairs, then return for more.

IKARI WARRIORS - Qualify for the High Score table & enter *Freeride* instead of your name. You're now indestructible in either one or two player modes.

INDIANA JONES AND THE LAST CRUSADE - Type IEHOVA on the loading screen for infinite lives. This one may not work first time, so keep trying. To get icons, press I, and to skip a level press L. Fast forward through a level by pressing 2.

JUG - Never heard of this one, but it starts with "J" so we'll stick it in. On the title screen hold down ESC and click the mouse pointer on the right edge of the picture to activate the cheat mode. This will give you infinite energy and lives. **LED**

STORM - When the game has loaded in, and the title screens are flipping about, type AMIGADAVID-BROADHURSTWANTSTOCHEAT. As you hit the last 'T' the message "CHEAT MODE ACTIVE - HELLO TO CAROL..." should flash onto the screen. Now your energy and fuel go down slowly, making it much easier to complete levels.

MENACE - While playing the game type 'XR3ITURBONUTTERBASTARD' and you will have a full complement of weapons, and your shield will be replenished. If you run out then just repeat the above at any time.

NAVY MOVES - The entry code for part two of this top value game is 2277, and the solution is as follows, where L, R, U and D have their usual meanings of LEFT, RIGHT, UP and DOWN. From the start, R, D, R, Shoot 2nd Official and take his code, L,U, enter door, R, shoot 1st Official and take his code, L, enter door, U, R, R, R, D, D, R, U, enter door, D, enter "EMERGE" on the computer followed by 1st Official's code, now type "STOP MOTOR" and enter 1st Officials code

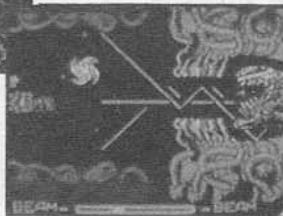
again, L, U, L, L, enter door, U, R, R, R, R, D, enter door, R, enter door, R, enter door, R, D, D, L, L, L, shoot the Transmission Official and take his code, L, type on the computer "OPEN DOOR" then enter 2nd Officials code, L, set bomb on left side of the screen, R, R, R, R, R, U, U, R, type on computer "TRANSMIT" then enter transmission Officials code, now enter "OABERBYAMD", L, L, U, U, U go to left side of screen.

PIPELINE - Try these level entry passwords:- FOLD, TEAR, DUCT, EYES, PEAS, PODS, EGGS.

PLATOON - Type 'HAMBURGER' on the title screen. Now press 'F4', which takes you straight to the village. Go to the far left hut and collect the torch from the round pot. Now go two huts to the left and collect the map after shooting the guard. You can now go to the next hut on the right, go down the trapdoor and play the second level with a full(ish) complement of men.



R-TYPE - Type SUMITA. (including the full stop) on the high score table for infinite lives. RAIDERSHOT, DYKE, HIGH, LINK, PEAR, KILN, and



BAND are the access codes for levels 2 to 8.

RETURN OF THE JEDI - Get yourself onto the high-score table and type DARTH VADER. Now when you start the game, pressing F2 takes you to the next level.

RICK DANGEROUS - Enter POOKY on the highscore table for the cheat-mode !!!

ROBOCOP - For infinite energy, start the game, pause it with RETURN, then type BEST KEPT SECRET (including spaces) and press fire to return to game.

SAVAGE - Code words for game two and three are SABATTA and PORSCHE.

SHADOW OF THE BEAST - After inserting the first disk, very quickly hold down the LEFT MOUSE BUTTON, and hold down the FIRE BUTTON on your joystick. Then when the BEAST title pic-

ture appears, press the space bar without letting go of the buttons. Tricky! Try your nose or chin. When the program prompts you for the second disk, let go and load normally.

SPHERICAL - The passwords for one player mode are RADAGAST, YARMAK, ORCSLAYER, SKYFIRE and MIRGAL. For two player mode, use GHANIMA, GLIEP, MOURNBLADE, JADAWIN and GUMBACHACHMAL.

STREET FIGHTER - Type STREET CHEAT while on the title screen, then press HELP to skip to the next dude.

STRIDER - To enter cheat mode, start the game, then pause it, and then hold down HELP, LEFT SHIFT, and ONE. Now unpause the game, and press 1-5 for different levels, and F1 to F4 for different stages in each level.

THUNDERBIRDS - Passwords are RECOVERY, ALOYSIUS and ANDERSON for the second, third and fourth levels.

VOYAGER - Type *When the sweet showers of April fall* on the main option screen to activate the cheat option. Now you can choose from three different cheat types - infinite shields, infinite fuel, and infinite equipment. Pressing ENTER on the main option screen gives the following extra options -SHIFT, DEL, HELP - cycle through objects CURSOR KEYS - rotate object7 - decrease size of object4 - enlarge size of object1n game mode :-F1 - Go down a levelF2 - Go up a levelF3 - Cycle through languagesF8 - Game PositionF9 - Data on objectF10 - Frame rate-One final note. Make sure you check out object number 0058!!

WIZBALL - Start and then pause the game, then type 'RAINBOW'. When you restart the game, pressing 'C' will fill the cauldron, 'S' will take you onto the next level, and 'T' will let you complete the entire game.

XYBOTS - Type ALF on the highscore table for infinite energy.

Best shoot-em-ups

XENON II: MEGABLAST and AWESOME.

We want you to know about the best games around. And here are two of

them. One was released early in 1990, the other at the tail end of the year. They're both destined to be classics.

XENON II: MEGABLAST:

You're about to save the galaxy as it has never been saved before. Sure, you've seen some superb graphics in your time. Sure, you've heard some classy sound-tracks. You might have even indulged in the odd bit of incredibly fast gameplay. But you have never - and I mean never - encountered anything to match *Xenon 2 - Megablast*.

This game is hot! Graphics are top class. Gameplay is top class. And the music? Well, what else can I say? Top class.

The soundtrack is in fact a mega-bop digitised creation of the popular British band *Bomb the Bass*. The rhythm is strong, the bass line is cool, and the whole thing sets the scene nicely. There are even vocals!

The screen layout is not unusual. You could call it a stock standard vertically scrolling shoot-'em-up. Your ship, the Megablast, begins at the bottom of the screen. The joystick moves it up and down and left and right - all the usual stuff. The only thing that distinguishes *Xenon II* from hordes of other games of this ilk is its quality.

The vertical scrolling, for example, is three levels deep. The lowest level is a starscape, a spattering of illuminated dots against the inky blackness of the sky. In level 1, this is overlaid with a menacing looking web, a complex network created by a huge cosmic spider. The playfield is immediately above the web - rocky outcrops form a channel for your ship and provide the third level of parallax scrolling.

The action starts almost immediately - wave after wave of beautifully crafted alien bugs cascade down the screen. There are giant Christmas beetles with

trailing sting-like tails, there are huge segmented snakes, there are even giant fleas. As each wave is demolished they leave behind floating bubbles - capturing these gives you credits for trading at the "shop" you will find at the end of each level. The shop keeper is an ugly dude - humanly speaking - with multiple horns and a menacing burble for a voice. He displays a *Sale-of-the-Century* style board full of goodies that you can purchase with your credit points. You may like to buy some extra speed, a backward firing laser, extra health points, or even a burst of *super-Nashwan power*, a 10 second foretaste of the power of a fully optioned ship.

The end of level 1 features a huge end-of-level nasty - a snailly sort of thing with firebreathing snakes dangling from its underbelly. Quite a number of well placed shots are needed to get to level two. With five levels in all, *Xenon II* provides a long term challenge. The gameplay is addictive, the graphics are superb, the sound track is rivetting. You think I'm impressed? You bet.

Distributed by:
Ozisoft 02 313 6444
RRP (Amiga) \$59.95

Awesome

Awesome is one game that lives up to its title. It's fast, it's playable, and it adds a new twist to the standard shoot-em-up. And it boasts some of the best shoot-em-up graphics ever. Stage One features a glistening rocket surrounded by enemy drones. Push the joystick and the whole universe rotates around you - a novel twist on the art of navigation. The action is fast and furious, though not too hard. The real test is yet to come.

Stage Two puts you in the middle of a meteor shower... quite a different experience to the shower you had when you got out of bed this morning. If these guys hit you, you're in trouble. Remember the huge mean centipede in *Space Harrier*? Well, now he's all grown up, and you get to meet him in stage three. Not a pretty sight, with rolling eyes and gleaming

spines protruding from all over his body - not only that, he moves like greased lightning. This guy really is awesome, with fine graphical details and super fast animation.

What next? Well, for starters there's a horizontally scrolling section coming up that I haven't quite mastered. And by the look of the pictures on the box, so far I'm only just scratching the surface. Along the way, your starship can be considerably enhanced - you can pick up spherical bombs, pulse lasers, peripheral guns, and even a wide beam plasma cannon. There's a trading phase built into the game too, and a navigational computer that lets you plot a course between planets. The full stereo soundtrack is nicely done, with gutsy music and solid sound effects.

What else could anyone ask for? Oh yeah - a T-shirt. There's one in the box, and it looks pretty neat, just as long as you don't mind walking around with *Awesome* stamped across the middle of your chest. Priced at \$79.95, *Awesome* isn't cheap. But it sure is good.

Distributed by:
Mindscape 02 899 2277
Amiga RRP \$79.95

Top Simulations

SHERMAN M4 and WINGS

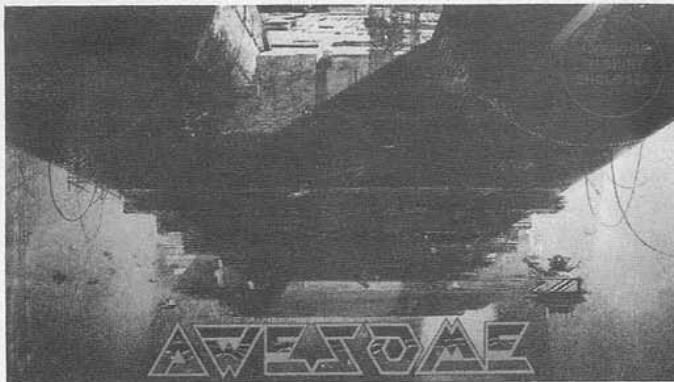
Phil Campbell reports on his two favourite military simulations. Both feature a new graphical approach, and both are fun to play.

Sherman M4

Tank simulations have been popular for years. First there was the coin-in-the-slot machine that let you peer through periscope sights and shoot it out with a platoon of enemy tanks. They were simple geometric affairs drawn as simple wire-frame graphics. A good game, and quite popular.

Since then there has been a steady trickle of home computer tank-sims. The graphics have gradually improved, though the game-play hasn't. Sometimes they're too complex. Sometimes they're too slow.

Sherman M4 is just right. Programmed by French software house Lori-



ciel, the game recreates three genuine World War II campaigns - the Normandy landing, Hitler's tank attack in the Ardennes and the El Alamein desert campaign of November 1942. You control a platoon of four Shermans, the most famous of the allied combat tanks. The enemy forces are authentically armed with the almost indestructible Tiger, the Jagdpanzer 5, the Stug 3 and the Panzer 4 - a formidable array of firepower. In a fascinating twist, the game is also targeted at the German market. The second half of the manual is printed in German, and subtitled *Die Panzer Simulation von Loricel* - obviously, the gameplay has been tweaked to give European players rather a different perspective! We get to drive the Shermans, they get to shoot them.

Controlling your tank is absolutely intuitive - you can drive by the seat of your pants. There are a number of views available. If you choose the interior view, you will find yourself sitting at the controls. The interior of the tank is recreated in painstaking detail, with a nicely subdued khaki colour scheme. There are numerous low-tech dials and gauges, exactly as you'd expect to find in a vintage tank. A pair of leather gloved hands move the control yokes back and forth as you move your joystick, adding a nice touch of realism.

The small rectangular viewfinder is overlaid with a gun-sight, a moving cross hair reflecting the angle of your 75mm cannon. The field of view is limited, but once you've got an enemy tank in your sights you can be sure of an accurately placed shot. If you feel like a bit of fresh air, simply open your hatch and prepare yourself for a panoramic view. The battle fields of Normandy spring to life - the ocean to one side, mountains to the other, a smattering of trees and a powdery sky. It's all yours to explore, providing you first disable the enemy bunkers and tanks. There are rivers, bridges, roads and buildings, all created in perfect perspective. To get a closer look at the enemy, a quick button press brings up your binoculars - clever binoculars, at that, because as you focus on another vehicle or installation, a message on the screen tells you what you're looking at.

What makes *Sherman M4* so special? Above all, it's the graphics. The programmers have skilfully combined two techniques. Tanks, bunkers and buildings are created by a mathematical *filled vector* system, common in many 3-D style games. Usually, games like this are played out on a similar *filled-vector* background - geometric and dull, with very little detail. But not this time. The vector graphics are woven into a beautifully detailed *bit mapped* display, bringing the whole game to life. The effect is so realistic that it is almost spooky.

Animation is fast and smooth - the 52km/h top speed of your tank feels just like 52 km/h should feel. Sound effects are accurate, and the enemy is tough. There's enough challenge here to keep you coming back time after time.

Sherman M4 is technically brilliant. The graphics set a standard by which other games will be judged. The sound effects are realistic. The scenario is accurately researched. But none of that really matters. The fact is, playing *Sherman M4* is a heck of a lot of fun.

Distributed by:
Pacronics
02 748 4700
RRP\$49.95

WINGS

WINGS

Those magnificent men in their flying machines take to the air in this authentic WWI flight simulator featuring hundreds of different missions.

Pilot's Log, May 8th 1916: "The line at Verdun is tightening. Observation balloons are cluttering the skies at Nomeny and providing the enemy with too much information on our aerodrome at Luneville, so this evening a couple of us are going over to Nomeny for a little balloon busting party. Always willing to help our friends."

My motor sputters to life as the sun sinks below the western horizon. The

time has come. Another mission. Another flight that could be my last. I put the thought out of my mind as the fragile frame of my bi-plane lifts from the runway. In moments I'm airborne, and heading towards the German Observation balloons that are dotted along the horizon.

Without warning, a bright red Fokker drops into view, peppering me with machine gun fire. I bank sharply and swing around to fix him in my sights - a short burst on the trigger sends him scurrying for cover. By now, the observation balloons are in range. Steady hand, keen eye - and the dirigible bursts into a ball of flame. Another successful mission for Waldo P. Barnstormer, hero of the 56th Aerosquadron.

Barnstormer has the starring role in *Wings*, an amazing new Amiga game from Cinemaware. Best known for their series of *interactive movies* - games that put you in the lead role of a simulated movie as it unfolds around you - Cinemaware have diversified into bigger and better things. And boy, have they done it well!

Wings has a much higher action quotient than previous *interactive movies* - more thrills and less strategy. To my mind, they've struck the perfect balance, making *Wings* one of the top games of the year. In total there are 230 authentic missions, including strafing runs, dogfights and bombing raids - classic *Red Baron* material that will have you twisting and turning in your seat as you try to drill your opponents full of holes. After several hours play - and a little cheating - I'm still only up to mission 19, so there's plenty of action crammed onto the two disk set.

Between missions, you'll get a genuine feel for airforce life. You'll meet the fiery Captain Farrar - if you fly like me, he'll dress you down regularly. Quite unreasonable, really - after all, I've only ditched five planes.

A leather bound journal automatically records your wartime experiences, and captures the ambience of the era perfectly. Minor sub-plots and mundane details of life on the front line are woven together in a way that really brings the game to life. Graphics are excellent. The clever mix of filled-vector and bit map styles gives an unequalled sense of realism. The screen displays a view from directly behind the pilot, with the upper

Add on and take off.

Commodore Amiga is now regarded as the most advanced home and small business computer. Its graphics, sound and video capabilities have captured the imagination of over 2 million users around the world. Closer to home, here are some system peripherals to add on that'll give your Amiga a real edge and take you even further ahead.



AMIGA 501 RAM EXPANSION BOARD

- 512 Kb RAM. Extends the memory of your Amiga 500 by up to 512 Kb
- Includes clock/calendar function with battery back-up. Maintains date and time on your A500 even if you have turned off the system
- Card format. Fits easily into memory slot on underside of the Amiga 500. Power supplied by system. No additional power cords or plugs are necessary.



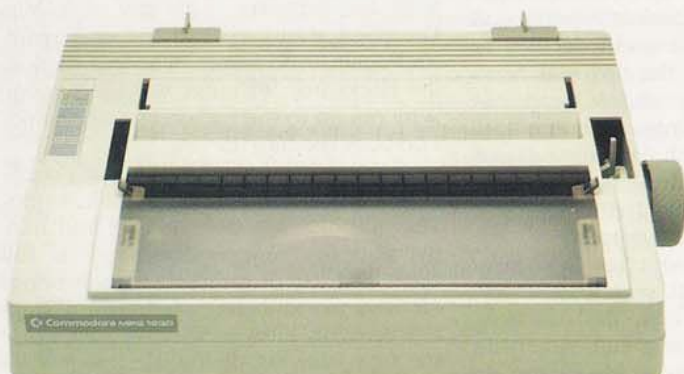
AMIGA 590 HARD DRIVE PLUS

- 20 Mb embedded XT type hard disk. Provides additional storage for your Amiga 500
- Host interface to the Amiga 500. Plugs into the expansion bus on the left side of your Amiga 500
- Autoboosting System. No need to format or configure the hard disk
- Comes with Workbench installed. Easy installation and operation
- Small fan installed. Avoids overheating
- SCSI and embedded XT interface. Allows for easy peripheral additions in the future
- Memory expansion up to 2 Mb. Improves productivity and efficiency.



AMIGA 1011 EXTERNAL DISK DRIVE

- 18" connecting cable enabling easy positioning of the drive
- 3.5" micro-floppy
- Low profile design
- MFM read/write format
- 880 K formatted storage capacity
- Supports double-sided/double density disks
- Formatted in 160 tracks with eleven 512 byte sectors each
- Power supplied by Amiga computer system.



MPS 1230 DOT MATRIX PRINTER

- Serial and parallel ports. Compatible with Commodore 64 and 128 computers via the serial port and Commodore PCs and Amigas via the parallel port
- Sheet feed options. Allows you to use either tractor feed for continuous feed paper or single sheet feeder for insertion of single sheets
- Built-in printer settings menu. Removes the need for dip switches
- Variety of user-definable print types and styles. Allows the user to utilise Elite, Pica, Condensed, Emphasised, Doublestrike, Underlining, Reverse, Superscript and Subscript to produce a high-quality presentation
- Printer ribbon in cartridge format. Allows easy replacement of ribbon cartridges
- Print speed of 120 CPS in draft mode and 25 CPS in Near Letter Quality mode. Enables the user to produce high-quality and draft-quality documents.

1084 STEREO COLOUR MONITOR

- Multiple external control dials. Allows the user to adjust colour, brightness, sharpness, contrast, volume, horizontal and vertical centring and width/height to their own requirements
- 14" picture tube. Large screen for better views
- Includes multiple cables. Compatible with C64, C128, Amiga 500, 1000 and 2000, PC10-III, 20-III and 40-III
- Inbuilt audio amplifier and speaker. Complete sound system for the Amiga's power, music and sound outputs
- Switch button for RGB or Composite mode. Allows switching between 40 and 80 column display on the Commodore 128
- VCR connectivity. The monitor can also be used as an output monitor for a VCR.




Commodore
AMIGA

See your Commodore dealer
 for all you need.
 And all you need to know.

Games for kids

Here's a pair of unique games for kids - even kids as young as two years old. They can explore to their hearts' content, they can make fun things happen, and they can learn what makes computers tick...

MCGEES

Madeleine Campbell is two years old. Like most active two year olds, she likes playing with her dad's computer. Especially when he's doing something very, very important. Especially when her fingers are coated with chocolate. She likes typing words like "xyhs ehj hjga" and "ygiuhs".

Computers are fascinating machines, especially for kids like Madeleine. And now you can satisfy their natural curiosity in a creative and enjoyable way. *McGee* lets your children explore a kid-sized world at their own pace. With richly coloured graphics and realistic digitised sounds, it's the perfect introduction to computing. Maddie and I decided to investigate. Opening the box was fun - anything with plastic shrink wrap has lots of appeal. The Amiga version comes on two diskettes, with easy instructions for hard disk installation. There's also a *ram install* option that I recommend if you've got plenty of spare memory - the game accesses the disk often, and most kids get impatient. If you load everything into memory first, the action is much faster. *McGee* is a cute American kid about the same age as Madeleine. As the game opens, he's asleep in bed. It's dark at first, but soon the sun starts to peep through the window. Like any two year old, *McGee* wakes up at the crack of dawn and climbs out of bed. Madeleine warms to him immediately. In *McGee's* bedroom there are a number of toys - a ball, a glove-puppet, and a hobby-horse. There's also a door to the hallway. The screen has two sections - the main room display, and a control panel arranged in a narrow strip below. The control panel shows a slightly smaller picture of the four items in the room. Selecting items is simple - just move the mouse and click. The reviewing team decided to

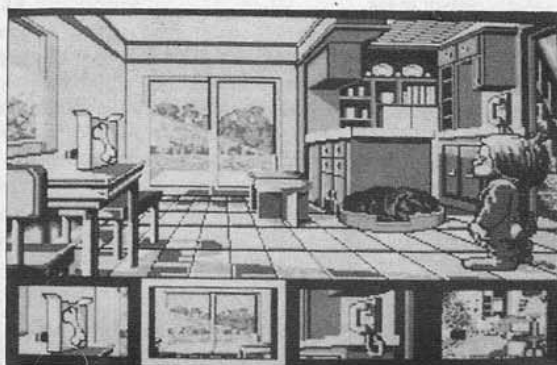
play with the ball. I moved the mouse, Madeleine *clicked* on the button. *McGee* picked up the ball and bounced it twice against the wall with a satisfying thump. There's no time to play with the puppet and the horse - Maddie wants to go exploring. A quick click on the picture of the door moves us to the hallway. The control panel now displays four possible destinations, all of them clearly shown in the main picture. We can visit *McGee's* sleepy Mum, go to the bathroom, look around down stairs, or go back to the bedroom. The stairs lead to the living room, which in turn leads to the kitchen. The first things we notice are a dog lying in a basket in the corner, and a box of *Doggie-Bones* on the table. The box appears again on the control panel below, together with a telephone and two exits. Madeleine wants to feed the dog. We point and click, and *McGee* springs into action. The sequence is nicely animated, and the dog responds with an appreciative woof. This is where we hit our first technical hitch. In computing terms, an infinite loop. There's nothing wrong with the program - it's just that Miss Campbell wants to feed the dog again. And again. And again. Why not explore the backyard? Why not wake his mum? Why not go to the bathroom? No thanks. Too busy feeding the dog.

McGee is designed to give kids confidence with computers. And it works. The graphics are clear, bright and happy, and the Amiga soundtrack is top class. The use of sampled speech brings *McGee's* world to life. Madeleine Campbell certainly likes it. Why? "Cause I do," she says. "Can we do it again now?"

KATIE'S FARM

Katie's Farm offers more of the same. The game interface is identical, so children who have mastered *McGee* can simply play immediately. This time there's a farm to explore, with horses, cows and chickens to check out. The atmosphere is pleasant, and there are some nice humorous touches. It's every bit as good as *McGEE*, and just as popular. □

Distributed by:
Dataflow
02 331 6153
RRP\$69.95



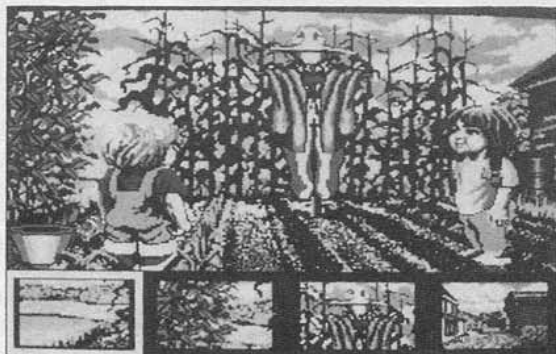
McGee

wing of your bi-plane spanning the top of the screen. Between the struts you have a clear view of the action, including enemy planes and the pleasant rural landscape below. As you bank and turn, the scenery spins past at an alarming rate. The effect is so convincing that you may need to keep an air-sickness bag on hand beside your computer.

As you'd expect, there are no high-tech frills in your cockpit. In fact, there's no instrumentation at all. You'll soon discover exactly what it means to fly by the seat of your pants. The sound of your engine provides essential cues - bank or climb too steeply and you'll hear it sputter and cut out. With luck, it will restart as you nose-dive towards the wheat fields below. But maybe not.

Wings is a brilliant game. It's got atmosphere, it's got action, and it's got loads of style.

Distributed by:
Questor
(ph. 02 662 7944)
RRP\$79.95



Katie's Farm

MODEMS: Telecomputing for Fun

To journey is better than to arrive, and there is no better way to travel than by modem. From the comfort of an armchair you're free to visit far away places and speak with those whom you have never met.

New computer users are always in need of a little counsel, be it to solve the contorted explanations of the included manuals or to try some feat never before performed. Finding help when you are in need is made far simpler thanks to the modern world of communications.

One of the fastest growing facets of this field is that of telecomputing. In short, this is the ability of computers to speak to each other by means of the public telephone network. Entering into this world you will discover yet another array of jargon to help explain the various technicalities involved.

You probably already know that to get started you'll need two things.

Hardware

A MODEM (MODulator / DEModulator) changes the information stored in your computer into a series of audible tones that may then be sent down the telephone wire - this is the first and most expensive part required. The second is a communications program which lets your computer talk to the modem and in turn to other computers. Various levels of sophistication allow more complex operations such as file transfers and remote access to your equipment.

Searching for the best buys is a tricky task. Dozens of brands with vast differences in ability exist.

At the most basic level, the biggest variation is the speed at which these little black boxes can send and receive information. This is measured in bits per second or the baud rate. In common practice most home users will use either 1200 or 2400 baud, which is roughly equal to 120 or 240 characters per second respectively. Around 120 characters per second is four times the speed at

which most people read. However the faster speeds are very useful, especially in transferring files or programs.

Discovery, a service provided by Telcom, uses a special *split* baud rate, where the sending and receiving speeds are different. Information is received by the user at 1200 baud, but sent at a sluggish 75 baud. This is fine when you are mainly viewing or retrieving information.

The various combinations of speeds are often represented by the following codes :-

V21 - 300 Tx / 300 Rx CCITT
V22 - 1200 Tx / 1200 Rx CCITT
V22bis - 2400 Tx / 2400 Rx CCITT
V23 - 1200 Tx / 75 Rx CCITT
V23org - 75 Tx / 1200 Rx CCITT (V23 set to originate)
B103 - 300 Tx / 300 Rx BELL (U.S.)
B212 - 1200 Tx / 1200 Rx BELL (U.S.)

Cheaper modems support only 300 baud or perhaps 300 and 1200/75. Although once the accepted speed, larger file sizes and more information along with improvements in technology have improved the average rate used by most users to 2400 baud.

Another important consideration when buying a modem is the language it understands. A standard has been set up for telling a modem what to do - it is known as the HAYES command set. This is a set of short instructions which allow you to COMMAND and PROGRAM your modem to do certain things. For ease of use, and flexibility, a HAYES modem is essential. Your communications software will issue commands to dial numbers, set baud rates and handle the answering of calls.

Of late HAYES modems have dropped in price to under the \$300 mark for a basic 300/1200 baud unit. Non-Hayes compatible modems sell for as little as \$110, but provide far less power potential.

Other features to consider are auto-answer and autodial.

With autodial you may simply enter a number into your computer, and then the modem will dial it for you automatically. This is very useful for accessing popular numbers which are continually engaged. It also allows you to maintain a phone book of systems, and simply choose the one to access at the click of a gadget.

Autoanswer is primarily used by people who allow remote access to their own equipment. You can set your modem to answer the phone after a prescribed number of rings, following which your computer software would allow various levels of access to your own equipment - remotely. Ideal if you want to set up your own BBS!

Smart modems offer more power, but tend to need more know-how to operate. Occasionally you may run into difficulties getting two smart modems to talk to each other. By smart, I mean those which do such clever things as automatically detecting the baud rate of incoming calls or the answering system and adjusting accordingly without user intervention.

A few models are expandable by way of piggy back boards, and expansion slots. In general, think carefully of what you'll need to begin with, and then make an 'informed purchase. Have a look at a few friends' set-ups, including the various speeds of operation. Few stores have units set up and running, and in general, even fewer are terribly well informed on the subject.

Software

There are literally dozens of terminal programs around, all of which will get you going. If you're using a Hayes modem, many functions, such as autoredial, are controllable using the built-in instruction set. Access to *Discovery* requires a special routine to decode the graphics and colour controls. Not all terminal programs include this facility, whilst only a few offer both ASCII and Viatel or videotext communications.

Commercial programs such as *Atalk III* offer powerful script languages for automating many procedures and even setting up a small BBS or calling other systems at night to download new material. Public Domain programs such as *JR-COMM* can be almost as powerful, but are not as well documented and may be a little more difficult to get support on.

See the Products Guide in this issue

for commercial programs and the fish disk list for some of the public domain ones.

Communications glossary

ACK: Acknowledge. Yes, I received that last byte, or string of bytes. Normally only used in file uploading or downloading.

ACOUSTIC COUPLER: A device that allows modem-generated audio signals to be transmitted into and received from a telephone handset. The handset is placed into rubber cups on top of the coupler. A small transducer at the bottom of the cups produces the actual signal.

ANSI: A terminal protocol.

ASCII: American Standard Code for Information Interchange. A seven-bit code used widely in data communications to transmit the letters of the alphabet, plus the standard punctuation marks and certain control characters. Every character has a corresponding numeric value that is common on most home computers. This allows different types of machines to speak with each other.

AUSTPAC: Packet switching network provided by Telecom. Allows computers which talk at different speeds and languages to exchange information.

AUTO-ANSWER MODEM: A modem that can answer an incoming call by generating a carrier tone that signals to the originating modem its call has been received.

AUTO-DIAL MODEM: A modem that can simulate a telephone dialer using either pulse or touch-tone dialing signals.

BAUD: A speed expressed in bits per second transferred over a communications line. 300 baud is roughly 30 characters per second.

BELL: The American standard for data communications.

BINARY: A number system using base two rather than base ten as in decimal.

BIT: Short for binary digit (either 1 or 0), the elemental unit of digital information. Every character is made up of several bits (usually eight). A bit is either one or zero, corresponding to pulses that may be transmitted audibly on telephone lines.

BUFFER: Often called capture buffer. In general, a temporary storage place for data. A capture buffer is temporary storage for data "captured" from a communications link.

BULLETIN BOARD: A computer you can access via modem especially for leaving messages to other users. Various subject areas are available, and normally programs can also be uploaded or downloaded.

BYTE: On an eight bit computer, eight bits make up a byte. Usually one byte is equivalent to a character. Each character in the ASCII set can be represented by only seven bits. Thus, a byte can be thought of as equivalent to a character for approximation purposes only.

CARRIER: A steady signal that can be changed in tone (modulated) to transmit data.

CHECKSUM: Used as a test for the integrity of information transmitted by any means where corruption may take place.

CONTROL CHARACTERS: ASCII characters that do not print out, but are used to control communications. Control characters can, for example, signal a sender to stop transmitting information when the receiver is busy.

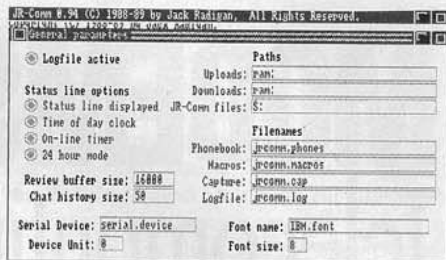
DATA: Information in code, text or numerical form, generally represented in ASCII code for digital communications.

DATABASE: A file or program which contains information in a specially formatted way. Normally made up of records and fields which are roughly equivalent to a card file systems cards and lines.

DOWNLOAD:

Transfer of files from the host computer or terminal to the guest terminal or your computer.

DUPLEX: In full-duplex communication, both terminals can send and receive simultaneously. In half-duplex operation, both ends can send and receive, but not at the same time. With full-duplex, echo-back communications, a transmitted character is not displayed until it has been verified by the receiver.



ELECTRONIC MAIL: Messages directed to a specific user on a Bulletin Board system. A personal message, similar to mail.

FREQUENCY: The number of cycles of an oscillating waveform that occur each second.

GLITCH: Hiccup on the telephone line. Some information may be garbled, making it unreadable.

HAYES: Command language for programming some modems.

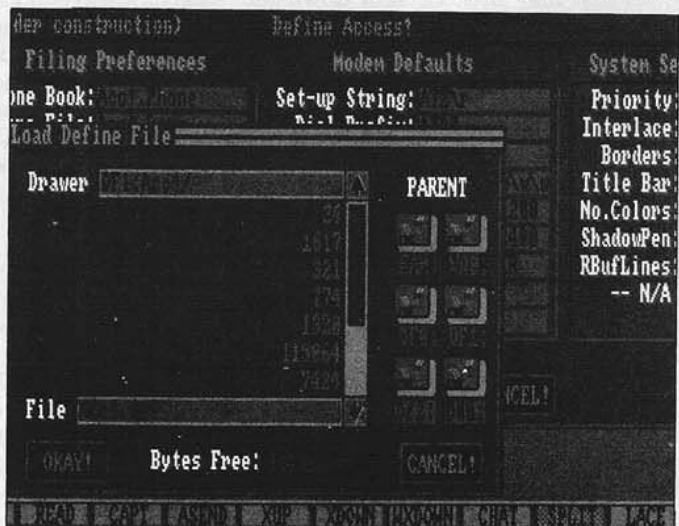
LF: Line feed. Moves the cursor to the next line.

MODEM: A device that modulates audio tones to carry digital signals and also demodulates the signals at the receiver so they can be understood by a computer. MODulator/DEModulator.

NAK: Negative Acknowledge. Used in file uploading/downloading.

NOISE: Random disturbances that degrade or disrupt data communications, present to some degree in all transmission links.

ORIGINATE/ANSWER: A modem that can either start a telephone call or receive one automatically. Some mo-



demers automatically assume originate or answer status, others require manual switching to the proper state.

PARITY: A means of checking for errors by adding an extra bit to each ASCII character transmitted.

PROTOCOL: A set of rules for the transmission of data. Protocols describe when transmission will start and stop, what error checking system is in effect and the like.

RS-232: A standard for transmission of serial data covering both hardware configurations and transmission parameters. Different manufacturers may implement some or all of the RS-232 standard in their communications products.

SEALINK. A downloading/uploading protocol.

SERIAL DATA: Data sent one bit at a time, as opposed to parallel data sent several bits at a time. Modems, operate on serial data.

SUPERKERMIT: An enhanced version of the Kermit protocol.

SYSOP: System Operator. The person who is responsible for the smooth operation of a particular remote access system such as a Bulletin Board.

TELECONFERENCING: Several people get together to talk via electronic means, either telephone or computer, about a particular subject. Often used in multi-user remote access systems.

TERMINAL: A device that receives or transmits digital information. Communications software is designed to control computers during terminal mode operation.

UPLOAD: Transfer of files from the guest terminal to the host terminal of BBS.

VT100: Another protocol that allows coloured text and formatting.

X-MODEM: This is a protocol that is used during uploading/downloading that uses blocks of 128 bytes.

X-ON/X-OFF: A protocol for pausing data transmission using simple control characters.

Y-MODEM: This is a protocol that is used during uploading/downloading that uses blocks of 1024 bytes.

Z-MODEM: This is a new style of protocol that doesn't stop sending until an error has been detected, this cuts time to a minimum. Can also continue a transmission even if it has been interrupted by loss of carrier. □

Buying a HARD DRIVE

Once you've been treated to the delights of hard disk power, you'll never think in terms of floppies again.

The mass storage potential, increase in speed, money saving on memory expansion and general boost to the ego makes a hard drive a very worthwhile addition to your computer system.

There is a wide variation in the different size, shape and performance of the average hard drive.

First of all there is the basic difference of hard drive capacity. This is usually expressed in Megabytes. A really base model unit, which would more than suit the average home user, would have 20 to 40 Megabytes of space. Now that's a lot of floppy disk at .8 of a Megabyte each!

The next big difference is the speed of these drives. There are three factors involved here. First up is the access speed, rated in milliseconds. Around 11ms is really fast. A slow drive could be punching as high as 60ms - this is the time it will take to move around the drive to get the information you need.

The next factor is the drive interface which is closely linked with the controller interface. Hard drives always need some form of controller to make them do their thing. On many units, the controller is built in. For the Amiga 2000, you can usually buy the two components separately, giving you the option to match different brands according to your budget.

The most popular type of interface is the SCSI or Small Computer System Interface. It's pronounced *scuzzy*. Abiding by this standard is one way of ensuring future compatibility, as the SCSI way is

becoming increasingly popular and drive prices are falling.

Other kinds of interfaces include XT - you'll see two ribbon cables, one much narrower than the other - or AT - with one ribbon cable similar in size to a SCSI cable. These two methods of connecting a drive are left over from the MS-DOS world. Some controllers offer both AT or XT and SCSI drive ports. XT drives are very cheap. AT drives are not much cheaper than SCSI units which are the most expensive.

SCSI drives are made by people like Quantum, Fujitsu and Conner. These drives are normally well respected for their reliability and performance. The cheaper XT drives made by people like Seagate tend to be slower.

Drive controllers have all sorts of fancy features which are very technical and can amount to nothing if you have a slow drive or are connecting the unit to an odd place on your Amiga. Some manufacturers use the parallel port (the one meant for your printer) to connect a hard drive, and a lot of performance is lost on the relatively slow speed of this method.

One important consideration for Amiga 500 owners - if you already have a device connected to the bus expansion port, such as a RAM expander, you'll need a hard drive which passes through the expansion bus. Of course, many Amiga 500 hard drives such as the A590 and the GVP Series II offer RAM expansion on board. Adding memory this way can work out much cheaper than buying fiddly internal boards.

A hard drive will usually need more care and file housekeeping than you previously paid your floppy collection.

Hard Drives

Get yourself a good hard disk backup program and a file utility such as *SID* or *Diskmaster*. These are essential in protecting your investment and keeping it organised. If you run into a problem with drive errors or lost data, don't panic, leave the computer as is and ring someone knowledgeable. Guesses at what to do can render your entire drive lost, and you will then have to reformat - losing all data - and wasting valuable time.

If you do a lot of work with graphics or digitising of any kind a large 80 Megabyte unit would be better. At the office, we have a 136 Megabyte Fujitsu drive which handles scanning, and keeps a lot of information on file. Our day to day Amiga 500s have Commodore A590 units on them, which we have found work well most of the time.

If ever a drive fails to boot, try switching off, wait a moment, and then try again. Sometimes AmigaDOS can work itself out of problems!

Drive guide

Commodore's own A590 is covered elsewhere in this publication - it would have to be one of the best value for money units out there now. However, it is not a real performer.

Another range of drives from MAST were not tested. These units use high quality Fujitsu drives and are quite good value for money. However, they connect to the parallel port. This can create some problems with compatibility, and tends to reduce the overall performance.

XEL A500

This locally built board follows hot on the heels of the A590 unit and will give you a similar configuration if you opt to fit all the RAM possible and purchase a hard disk.

The marketing idea behind the board is fairly well thought out. The board as you buy it has no RAM added and sits on the expansion bus of your A500 (no pass-through, however). You can then opt to add RAM to it in 512K increments, and later you can purchase a hard disk from XEL's suppliers, with a discount of \$200 from the list price. So the beauty of it is that you can look after your pocket by buying the extras

as you go along.

The unit is packaged on a smart-looking card with plastic moulded wrap and instructions on the back of the pack. Its dimensions are 17.5 x 10 x 1 cm, pretty small, and it is an off-white colour. To fit your RAM chips (I got 8 chips, 256k x 4 bit DRAMs for about \$17 each, making up a meg of extra RAM), simply unscrew the 4 screws on the unit and plug the chips in according to the diagRAMs. You'll also have to fit the supplied jumpers over the two pairs of pins if fitting 1 meg (one pair if fitting half a meg), a simple operation.

This is a product that will suit the A500 owner who wants to increase his system gradually. The cost of the board is \$???, and a half-meg costs about \$68 (though prices keep dropping), followed by another half-meg later for a similar price. Then you can take advantage of the 20 meg hard disk offer of \$??? (or larger ones for corresponding cost) when finances permit.

For the dealer closest to you, phone (08) 231 7396.

Trumpcard

This is the budget alternative at around \$499 without the drive - a little wider and taller than the A590. The Trumpcard arrives standard with a SCSI interface - supply your own SCSI drive at the time of purchase or from your own resources. Extra memory may be added after you first purchase a board for \$499 - although this will require you obtain an external power supply (not included with the unit). At the time of writing, no power supply was available, although several people have adapted other power supplies.

The Trumpcard is not as well constructed as either the A590 or GVP unit. The basic wedge shape is reasonable -

but the overall look is a little cheap. Inside, everything is functional. Power is extracted from the A500. A utility disk and manual is included, which we are assured is every bit as good as the A590 documentation, if not a little better.

One benefit of the Trumpcard 500 is the ability to remove the SCSI interface board from within the case and install it in an A2000. This helps ease the upgrade path, and would certainly make more sense than a redundant A590 drive.

There is no external SCSI connector, although one could very easily be added - a place in the casing already exists for the connector. TrumpCard drives are not as readily available as they used to be. Try Computer Spot stores or your local Amiga user group.

GVP Impact A500

Great Valley Products have been churning out some serious power user type products for the A2000 for some time. It was therefore a fine thing to see them turn their attention to the A500 and supply some equally well endowed items such as the Impact A500 - tagged as the ultimate expansion tool.

Our test unit included four megabytes of RAM and a 40 Megabyte Quantum ProDrive. It worked beautifully. This is one serious add-on. The interface is strictly SCSI - anything from 20MB to 102MB. The DMA arrangement spews data into an onboard 16KB buffer in order to put an end to bitplane induced drive speed degradation. An additional SCSI device may be connected to the rear of the unit.

The Impact has its own power supply and looks every bit as beefy as it sounds. This is no sleek peripheral, somewhat boxy in fact - but it is reasonably colour coordinated. Installation is a simple affair - just slide into the 86-Pin expansion port on the left side of your A500. A toggle switch allows the auto-booting facility of the Impact to be enabled or disabled, thus allowing auto-boot games to be loaded from floppy.

The operation and performance of the A500 system is the same as the A2000 hard card reviewed following:-



IMPACT A2000-HC /40Q

This hard drive, or more correctly hard card, has been designed solely for the Amiga 2000 range of computers. It consists of a SCSI controller board fitted with a Quantum 40meg drive and two AutoBooting EPROMS (The EPROM chips allow the user to boot up their computer without the need of the Kick-Start or Workbench disks). The card uses a 16k onboard cache to maximise speed.

The entire assembly slots neatly into any one of the Amiga's five 100-pin internal expansion slots. The installation manual recommends that the unit be installed in the end slot closest to the power supply, so that only a single expansion slot is used as the hard drive unit will hang over unused space inside the 2000. Power for the unit is supplied internally by the Amiga.



Impact A500 - See previous page.

GVP supply an installation disk with the unit. It is basically a Workbench disk plus the files required to run and install the hard disk. All you do is boot up your machine using the disk and double-click on the "install" icon. Once started the hard disk will be automatically formatted and initialised. All that is required from the user is to answer several questions along the way as to how he/she would like the hard disk partitioned. The standard procedure is to create two parti-

tions DH0: and DH1: All the relevant AutoBoot and AmigaDOS files will be automatically copied to their respective directories situated on the DH0: partition. The FastFilesystem format is fully supported.

The IMPACT HC series of SCSI controllers provide two separate SCSI connectors, namely the 50-pin internal SCSI connector and the 25-pin external SCSI connector. Each one of these is intended for a different purpose. The internal connector is for attaching SCSI peripherals which are mounted within the 2000 casing, such as another hard disk drive. The external connector is intended for attaching other external SCSI devices which have their own power supply and case. Up to seven external units can be attached to the Impact SCSI controllers. The external connector is also electrically compatible with the Macintosh computer.

The GVP HC/xxQ series is now also available with a Fast RAM option on-board. Up to 2megs of Fast Ram SIMM chips can be added to a small board attached directly to the controller board, allowing the user to save precious internal bay space.

PS: Both GVP units have been upgraded to the new SERIES-II specification, making them considerably faster than before. GVP products are available from most Commodore dealers or call (03) 369 7020.

Others

There are many other drive controllers around which we were not able to test. ICD have brought out a new range which look very affordable, and according to the comparison charts floating around, are incredibly fast - faster than any other units. C.Ltd units and other assorted imported brands which do not have full local support are probably best avoided. If the controller has problems working with the hard drive you select, or breaks down, you could be left on your own.

Disk drives - glossary

DELETE: Unwanted files may be erased. The disk directory is updated, freeing additional disk space, and the directory entry is modified. The file remains on the disk and may be recovered using a special utility. Once the disk is written to, parts of the file will become erased and the file will become irretrievable.

DIRECTORY: A list of the files, their length, location and type on a specific disk. The directory may be viewed using Workbench. Each file with an icon will be visible, and sub-directories or drawers can be seen. From the CLI or SHELL or files including icon (.info) files can be viewed using the LIST or DIR command.

DOS: Disk Operating System.

FORMAT: To arrange or prepare a disk ready to store information. Different brands of computer use different formats. A blank disk is similar to a new carpark with no lines marked in which vehicles may be parked. Formatting the disk divides the disk into partitions ready for information just as marking out a new car park prepares car parking places.

FILE: Information related to one subject or a program containing a set of instructions for the computer. There are various file types, arranged according to the format required by a particular program.

HUB: The central circle about which the disk spins.

RANDOM ACCESS: Any part of a disk may be accessed instantly. There is no need to read preceding information to reach a specific point on the disk. This means information is read and written faster than sequential access.

READ ERROR: Occasionally disks become damaged through misuse, old-age, accidents and mishaps. Heat, humidity and dust can also cause the same result. Sometimes a read error is caused by slight damage to the information. These types can be recovered from and are known as soft errors. Physical damage to the media is a hard error.

RELATIVE: (files) A file broken into records, all exactly the same size and accessible by the record numbers, is called a relative file. Databases, and simple filing systems, make use of this format.

RENAME: The name attributed to a file and stored in the disk directory may be renamed.

SECTOR: Each track is divided into sectors, depending on whereabouts on the disk it is located. Tracks towards the outside of the disk have more sectors than tracks toward the inside of the disk.

SEQUENTIAL: A file stored where each entry immediately follows the next. To read the last entry, all those preceding it must also be read. This method is usually used for wordprocessor files. □

IF YOU EVER NEED HELP THERE'S AN AMIGA ENTHUSIAST NOT FAR AWAY.

New South Wales

Service Centre	Address	Telephone
CENTRAL WEST COMPUTER CARE	Shop 5, Brook Moore Centre, BATHURST, NSW 2795	(063) 32 2555
COMPUTER TECH SERVICES	43 Planthurst Street, CARLTON, NSW 2218	(02) 547 2333
MALCOLM GRAHAM COMPUTER REPAIRS	14 Wharf Street, TUNCURRY, NSW 2428	(065) 54 5935
DADNJ ELECTRONICS	10 Nelson Road, CARDIFF, NSW 2285	(049) 56 6255
PACE COMPUTER SERVICES	17 Moore Street, LEICHHARDT, NSW 2040	(02) 692 7900
SIBNET PTY LTD	(Rear) 13 Gibbes Street, CHATSWOOD, NSW 2067	(02) 417 7600
P & W CROESE	106 Auckland Street, BEGA, NSW 2550	(064) 93 2123
COMPUTERS & BITS	Unit 22, Lot 66, Able Street, SOUTH PENRITH, NSW 2750	(047) 214553
GRIFFITH COMPUTER REPAIRS	69 Banna Lane, GRIFFITH, NSW 2680	(069) 62 2318
AVC ELECTRONICS	23 Ellen Street, WOLLONGONG, NSW 2500	(042) 28 6932
GAINRUN PTY LTD	7/27 Justin Street, SMITHFIELD, NSW 2164	(02) 757 1055
SHERLOCK ELECTRONICS	25 Broadmeadow Road, BROADMEADOW, NSW 2291	(049) 62 2514
UNITECH COMPUTER SERVICE	94 Market Street, WOLLONGONG, NSW 2500	(042) 27 1323
BITHRAMERE COMPUTERS	783 Duri-Wallamore Road, BITHRAMERE, NSW 2340	(067) 674272
BASECOM COMPUTER SERVICES	Shop 7, 20-28 Montauban Avenue, SEAFORTH, NSW 2092	(02) 907 9270

Queensland

Service Centre	Address	Telephone
PARCOM (BRISBANE)	Shop 10, White Hills Shopping Centre, CAMP HILL, QLD 4125	(07) 395 2211
PARCOM (SOUTHPORT)	The Local Shopping Centre, 171 Nerang Street, SOUTHPORT, QLD 4215	(075) 915821
PARCOM (STAFFORD)	1 Clifford Street, STAFFORD, QLD 4053	(07) 857 6311
PCB ELECTRONICS	502 Mulgrave Road, EARLVILLE, QLD 4870	(070) 33 1217
SEQ COMPUTER REPAIRS	Shop 4, 32 Brisbane Road, BUNDAMBA, QLD 4304	(07) 816 1588
TECHNIGRAPHIC SERVICES	643 Flinders Street, TOWNSVILLE, QLD 4304	(077) 72 7270
PACE COMPUTER SERVICES	Unit 3, 30 Old Cleveland Road, STONES CORNER, QLD 4120	(07) 394 3177
ABEC ELECTRONICS	21 Parker Street, MAROOCHYDORE, QLD 4558	(074) 43 6520

Australian Capital Territory

Service Centre	Address	Telephone
AMALGAMATED BUSINESS MACHINES	65 Kembla Street, FYSHWICK, ACT 2609	(062) 80 4887
COMPUSERVE	3 Dundas Court, PHILLIP, ACT 2606	(062) 85 1755

Victoria

Service Centre	Address	Telephone
NUCLEUS COMPUTER SERVICES	1048-1054 Dandenong Road, CARNEGIE, VIC 3163	(03) 563 5688
TATE PALMER TECHNOLOGY	38B Scotsburn Avenue, OAKLEIGH SOUTH, VIC 3167	(03) 543 6060
MEGATRON COMPUTER INDUSTRIES	Unit 2, 62-64 Charter Street, RINGWOOD, VIC 3134	(03) 870 4017 (03) 870 4844
NORTHWEST ELECTRONICS	Unit 5, McDougall Road, SUNBURY, VIC 3429	(03) 744 4440
PACE COMPUTER SERVICES	70 Hanover Street, FITZROY, VIC 3065	(03) 419 0444
KINETIC ENERGIES	Shop 4, 62 Little Malop Street, GEELONG, VIC 3220	(052) 29 2316

South Australia

Service Centre	Address	Telephone
FORCE ELECTRONICS	5 Somerset Circuit, LONSDALE, SA 5160	(08) 326 0901
RADCOM	Unit 7, 100 Hewittson Road, ELIZABETH WEST, SA 5113	(08) 287 1191
GCS CONSULTING SERVICES	1068 South Road, EDWARDSTOWN, SA 5039	(08) 276 4600
PROCARE	241 Pulteney Street, ADELAIDE, SA 5000	(08) 232 0991
SERVISCOPE AUSTRALIA PTY LTD	456 Payneham Road, GLYNDE, SA 5070	(08) 336 2220
ADELAIDE CASH REGISTER	178 Gouger Street, ADELAIDE, SA 5000	(08) 231 1433
OUR SERVICE COMPANY	111 Adelaide Road, MURRAY BRIDGE, SA 5253	(08) 32 5011

Western Australia

Service Centre	Address	Telephone
COMPUTER WORKSHOPS	105 Lord Street, PERTH, WA 6000	(09) 227 7373
COMFIX COMPUTER MAINTENANCE	111 Cambridge Street, LEEDERVILLE, WA 6007	(09) 388 1665
DAVES OSCITRONICS	1st Floor, Savings House, Hedland Place, KARRATHA, WA 6714	(091) 85 4836
CHIP BUSTERS	Shop 5, Victoria Park Village, 910 Albany Highway, PERTH, WA 6101	(09) 472 3899

Northern Territory

Service Centre	Address	Telephone
COMPUTER SUPPORT & MAINTENANCE	Suite 2, 96 Woods Street, DARWIN, NT 5790	(089) 811338 (089) 811397 (089) 811499

Tasmania

Service Centre	Address	Telephone
ADVANCED ELECTRONICS	127 Wellington Street, LAUNCESTON, TAS 7250	(003) 34 0066
PRECISION SOLUTIONS	295 Sandy Bay Road, SANDY BAY, TAS 7005	(002) 31 1633



Authorised Service Centres

USER Group Update

Around Australia many Amiga users have joined together to form user associations, clubs and groups. Following is a list of the active groups from which we regularly receive correspondence. These details may change from time to time - check your local computer store for details or call us (02 879 7455) to see if we have an update. User groups offer many services in return for a small annual membership

fee. Many produce a bi-monthly newsletter with local news, product reviews and group activities listed. Some hold tutorials or workshops. Others run a bulletin board system, magazine or software library or help lines to more informed members. Many have vast collections of PD disks available at nominal rates to members.

Of course, there are always a few bad eggs out there, and it is known

that a few user groups are heavily involved with the exchange of commercial software. This practice is illegal. It amounts to theft and is known as piracy - a nice word for a pastime that could put a stop to the wonderful flow of new products we see for the Amiga today. When you join a user group, be responsible, don't get involved with piracy. Federal authorities are cracking down on this area.

NOTE - In the interests of space and to minimise repetition - The abbreviation CUG stands for Commodore User Group.

NSW

Albury Wodonga CUG

P.O. Box 1014,
Albury, NSW 2640

Amiga Burwood UG

P.O. Box 308,
Burwood, NSW 2134

Armidale Amiga UG

3/217 Beady Street,
Armidale, NSW 2350

Australian Amiga Users Association

P.O. Box 389,
Penrith, NSW 2750

Canberra Amiga UG

P.O. Box 596,
Canberra City ACT 2601

Director

Jonathan Bishop,

Vice Director

Simon Tow,

Secretary - Colin Ward,

Treasurer

Trevor Raddatz.

Meetings - 2nd Tuesday of

each month at the City RSL

13B Moore St in the Anzac

Building. 7.30 pm.

Details of the date and

expected topic to be presented

will be advertised in the Public Notices in the Canberra Times on the first Saturday of each month and in the Canberra Times "Fridge Door" the week of the meeting.

BBS - Online 24hrs (06) 255 1469.

Newsletter - BECAUSE

Canberra UG ACT Inc

P.O. Box 409,
Curtin, ACT 2005

Compu-Tech Computer Club

15 Hazelton Grove,
Gateshead, NSW 2290

Cooma Amiga UG

P.O. Box 409,
Cooma, NSW 2630

East Coast Amiga

P.O. Box 344,
Gosford, NSW 2250

Eastern Suburbs CUG

P.O. Box 236,
Botany, NSW 2019

MacQuarie Fields UG

32 Rosewood Drive,
MacQuarie Fields, NSW 2564

Newcastle CUG

4/13 Smart Street,
Charlestown NSW 2290

Chairman - Marcus Graham
(049) 634 952,

Administration - Sue Slack
(049) 471 118

Meetings - 7.00 p.m. 4th

Tuesday each month at

Charlestown Public Library,

Ridley Street, Charlestown,

Newcastle

Newsletter - VICTIM

Penrith CUG

42 Alpine Circuit,
St. Clair, NSW 2759

Meetings - 3rd Wednesday of

each month at the Victoria

Street Community Cottage,

Victoria Street, Werrington

from 7.30p.m.

President - Gary Bull;

Secretary - Elena Denton;

Treasurer - Rob Woods

Phone - (02) 670 3207 or (02)

623 4258 after 5p.m.

RAAF Richmond Computer Club

C/- CTS, SSSRIC, RAAF

Base, Richmond, NSW 2755

Singleton Amiga UG

22 Falkiner Crescent,

Singleton Heights NSW 2330

Chairman - Ken Gate,

Treasurer - Peter Smith,

Secretary - Bob Aitchison

Meetings - 2nd Wednesday

each month at 7pm in the staff

room of the Singleton Heights

Public School.

Sydcom

GPO Box 1542,
Sydney, NSW 2001

Tuggerah Lakes CUG

P.O. Box 2257,
Gosford, NSW 2250

Wollongong Amiga UG

42 Heaslip Street,
Coniston, NSW 2500

Commodore Hornsby UG

P.O. Box 1578, Hornsby,
Northgate, NSW 2077

VIC

CUG (VIC)

1 Argyle Street,
Gladstone, VIC 3140

CRI CUG

President - Rod Mason (03)

User Groups

306 4063,
Membership Secretary -
Steve Riepsamen (03) 314
5677

Meetings - Every 3rd
Sunday, VRI Hall, Stewart
Street, Braybrook (behind
Squash Courts), 7.30
p.m. 130 members

Dingly CUG

1 Hazelwood Close,
Dingley, VIC 3172

Eastern Suburbs Eighty UG

17 Douglas Avenue,
Box Hill South, VIC 3128

Knoxcom Incorporated

P.O. Box 2000,
Ferntree Gully, VIC 3156

Melbourne Commodore Computer Club

P.O. Box 177,
Box Hill, VIC 3128

Moe CUG

20 Edward Crescent,
Trafalgar, VIC 3824

Shepparton Commodore Computer Club

Meetings - Fortnightly on
Sunday night 7.30 - 9.00 p.m.
at the Guide Hall, Cnr of
Nixon & Skene Street,
Shepparton.
Secretary - Val Hutchinson

Stawell CUG

P.O. Box 299,
Stawell, VIC 3380

VRI CUG

P.O. Box 253,
Glenroy, VIC 3040

Yarra Valley CUG

P.O. Box 170,
Lilydale, VIC 3140

Amiga UG (Vic) Inc

P.O. Box 48,
Boronia, VIC 3155

Balaclava UG

3/2 Almond Avenue,
Brooklyn VIC 3025

Border District CUG

P.O. Box 536,
Wodonga, VIC 3090

QLD

Brisbane Amiga UG Inc

Lot 4 Lindsay road,
Morayfield, QLD 4500

Bundaberg CUG

P.O. Box 1599,

Bundaberg, QLD 4670

Commodore CUG Inc (CCUG Inc)

P.O. Box 274,
Springwood QLD 4127
President - Greg Perry ph
(07) 366 3295,
Secretary - Mike Williams ph
(07) 209 9084BBS - (07) 808
7694 & (07) 808 8823.

Sysop - Graeme Darroch
(07) 209 1999.

BBS is part of Fido Network
(Node No 3:640/304) and can
be accessed by members at
300, 1200/75, 1200, 2400
bps and 9600bps, using 8
data bits, 1 stop bit and no
parity.

Newsletter - Cursor

Commodore UG Mackay

P.O. Box 422,
Mackay, QLD 4740
Meetings - Every second
Wednesday night at Mackay
& District Education Centre,
North Mackay 7.30 p.m.
Secretary - Trevor Johnston
(079) 59 8417

CUG of Australia

P.O. Box 166,
Pittsworth, QLD 4350

Gladstone Amiga UG

P.O. Box 1390,
Gladstone, QLD 4600

Ipswich CUG

P.O. Box 252,
Ipswich, QLD 4305

Mount Isa Amiga UG

P.O. Box 1722,
Mount Isa, QLD 4825

Northern Amiga UG

P.O. Box 1722,
Mount Isa QLD 4825
President - Marc Katona
Newsletter - Newsletter of
the Northern Amiga User
Group

Australian Amiga UG

P.O. Box 1386,
Toowoomba, QLD 4350
Phone - (076) 932 198

Meetings -
2nd Saturday of each month
130 Members
Publication
Australian Amiga.

SA

Barossa UG

RSD Box 1 Daveyston,
Greenock, SA 5300

S.A.C.C.U.G.

P.O. Box 427,
North Adelaide SA 5006
Meetings - 1st & 3rd Monday

of the month at 7.30 p.m. at
North Adelaide Primary
School, Tynte Street, North
Adelaide (next to the North
Adelaide Fire Station). \$1.00
per person for hall hire.

President - Glenn,
Secretary - Laurie.

Newsletter
Bits and Bytes

Southern Districts CUG

1 Birubi Way,
Morphett Vale, SA 5162

Whyalla CUG

P.O. Box 2367,
Whyalla (Norrie), SA 5608

Amiga UG of SA

P.O. Box 10131,
Adelaide, SA 5001

WA

Commodore CUG (WA)

234 Balcatta Road,
Gwelup, WA 6021

Amiga UG of WA Inc

P.O. Box 595,
Cloverdale WA 6105
Meetings - Curtin University,
Bentley.

General Meeting - 2nd
Tuesday every month.

Tutorials - Every Friday.

President - Bill Charpe -
Smith (09) 362 3539.

Secretary - Arthur Rutland
(09) 279 2778

Newsletter - AUGMENT

Commodore Computer Club WA

P.O. Box 146,
Willetton, WA 6155

Hedland CUG

5a Baler Close,
South Hedland, WA 6722

Perth Commodore & Amiga UG

22 Marriot Way,
Morley WA 6062
Contact - John Roe (09) 276
6287

Meetings - Every Thursday
night at 7pm - 9.30 p.m. at
the Les Hansman Centre,
246 Walter Road, Morley
(opp Coventrys).

Postal and Repair Service Centre

22 Marriot Way,
Morley WA 6062 (09) 276
6287

TAS

Tasmanian Amiga UG

6A Hamilton Street,

Launceston, TAS 7250

Tasmanian Commodore Users Association

P.O. Box 673 GPO, Hobart
TAS

President - Kaz Paul,
Vice President - Ray

Madden,
Club Secretary Ken Silver

Meetings - Glenorchy
Derwent Regional

Library, Terry Street,
Glenorchy, 7.30p.m.

Newsletter - Discourse

VK Commodore UG

P.O. Box 168,
Launceston, TAS 7200

West Coast CUG

8 Hurst Street,
Queenstown, TAS 7467

Burnie Commodore Amiga UG

P.O. Box 471
Burnie TAS 7320

President - Clyde McLennan,
Vice President - John West,

Secretary - Wayne Marks
Meetings - Mooreville Road

campus of TAFE, 2nd
Tuesday each month except
school holidays.

Workshops and courses
notified at meets and in the
newsletter.

Newsletter - B.C.A.U.G.
News

NT

Amiga UG of NT

P.O. Box 3895,
Winnellie, NT 0821

New Zealand

Christchurch CUG

P.O. Box 4665,
Christchurch, NZ

Amiga UG of N.Z.

P.O. Box 35107,
Christchurch, NZ

NZ Micro Computer Club

P.O. Box 6210,
Auckland, NZ

New Zealand Amiga UG

P.O. Box 85094, Sunnynook,
Auckland, NZ, NZ10

Product Guide

Looking for software? Here's a list of all the titles we found available in Australia. Some hardware is listed too. Your local computer store should be able to order in the product you're after. A code for the distributor or importer is listed with each program along with the current recommended retail price. Prices often change from store to store - and as new versions of products are released.

Your dealer can contact the distributors using the details below. Dealers are often helpful too if you require further product information which your dealer cannot help you with.

Be sure to check the amount of memory required. Also, with graphics

programs, ensure you get the PAL version. Some graphics programs are released with different versions for PAL and NTSC screens. The NTSC version, which is especially for the smaller US screens, will not be able to display images in the full screen area of Australian systems - a small black bar across the bottom about one-sixth the monitor height is common. We have not listed any entertainment titles - these come and go so quickly that it's impossible to keep up to date.

Recommended retail prices and availability are based on information supplied by those distributors who responded to our enquiries. The distributor listed is not necessarily the only or the exclusive distributor of that product.

ACI - Acre Industries
Unit 1, 48 O'Sullivan Beach Rd
Lonsdale 5160
(08) 326 2926

BES - BEST Software
PO Box 334, Lindfield 3070
(02) 416 9077

CBM - Commodore Computers
67 Mars Road, Lane Cove 2066
(02) 427 4888

CCS - Color Computer Systems
18 Appleby st
Balcatta WA 6021
Phone & Fax: 09 349 6492

CMR - Computa Magic
Shop 5, 30 Hall Street
Moonee Ponds 3039
(03) 326 0133 Fax (03) 370 8352

CMT - Computermate Products
PO Box C64
Mt. Kuring-Gai, NSW 2080
(02) 457 8388 Fax: (02) 457 8739

DFL - Dataflow
134 Barcom Avenue
Rushcutters Bay 2011
(02) 331 6153

DTU - Desktop Utilities
PO Box 3053
Manuka ACT 2603
(06) 239 6658 Fax (06) 239 6619

ECP - Entertain. & Computer
4/18 Lawrence Drive
Nerang 4211
(075) 96 3488 Fax: 963512

FDR - Fordray Manufacturing
6 Hawthorn Place
Orange NSW 2800
(063) 62 9901 Fax (063) 62 8675

FNH - Fonhof Computer
64 Cross Street
Baulkham Hills NSW 2153
(02) 639 7718 Fax (02) 639 5995

H&R - 3 Marsh Street
Granville NSW 2142
(02) 897 1044

HIT - Harris Hitek
19 Maloney Street
Blacktown NSW 3148
(02) 671 1856

HPD - Hardware Peripheral Dist.
PO Box 121
Dry Creek SA 5094
(08) 349 8486 Fax: (08) 349 4667

KAW - Kawai Australia
PO Box 189
Waterloo NSW 2017
(02) 663 0571 Fax: (02) 662 4726

MAS - M.A.S.T
Computer Discounts
19 - 21 Buckland Street,
Broadway, NSW 2007
(02) 281 7411 Fax: (02) 281 7417

MAT - MATRIX
Unit 10 / 21 - 29 Chester St
Camperdown NSW 2050
(02) 550 4688 Fax: 550 4663

MEG - Megadisc
PO Box 759,
Crows Nest 2065
(02) 959 3692 Fax: (02) 959 3525

MIC - Micro Accessories
Unit 8 Hewittson Road
Elizabeth West SA 5113
(08) 287 0191

MSP - Mindscape
5-6 Gladstone Road
Castle Hill NSW 2154
(02) 899 2277 Fax: (02) 899 2348

MUL - Multicoil Amusements
17 Wrights Place, Labrador 4215
(075) 37 5711 Fax: (075) 37 3743

OZI - Ozi Soft Pty Ltd
Locked Mail Bag No 7
Rosebery 2018 (02) 313 6444

PAC - Pactronics
98 Carnarvon Street,
Silverwater (02) 748 4700

PP - Power Peripherals
68 Woods St
Laverton Vic 3028
(03) 369 7020

PRI - Prime Artifex
PO Box 288,
Gladesville NSW 2111
(02) 879 7455 Fax: 816 4714

SWA - Sourceware Pty Ltd
Unit 1, 6 George Place,
Artarmon 2064 (02) 427 7999

SYB - Sybiz Pacific Pty Ltd
7 Jordan Street,
Gladesville NSW 2111
(02) 954 5211

XEL - XEL Pty Ltd
PO Box 121
Adelaide SA 5001
Phone (08) 831 7396
Fax: 018 824 648

Accounting

B.E.S.T. Accounting

Integrated accounting, mouse driven, automatic posting. Includes Inventory, services, accounts receivable and payable and general ledger.
MATRIX \$495.00

B.E.S.T. MINI

Cut down version of B.E.S.T.
MATRIX \$299.00

Desktop Budget

Home/small office accounting. Icon driven,

online calculator, setup monthly payments, month-end reconciliations, year-end rollover.

Easy Ledgers

Fully integrated accounting system, sales, purchases, inventory and general ledger. Familiar bookkeeping interface. Point and click. Latest version includes Job Costing.
SYB \$595.00

Electronic Cashbook

Handles 5 separate banking sections, 15 Periodical

Payments, 245 User Dissections, Audit Trial Facility, Manual/Batch Reconciliations.
CMT \$179.00

Electronic Debtors

Accounts Receivable package, ported from MS-DOS environment.
CMT \$229.00

Home Accounts

Simple to use, flexible cash accounting system. Fully menu driven.
PAC \$89.95

Phasar V4.0

Financial record keeping program. Provides savings and loan analysis, budget reports, projects and prepares income taxes. Includes full documentation.
CMT \$99.00



Software & Hardware Guide

S.B.A. Cash

Accounting software
CMT \$149.00

S.B.A. Xtra

Accounting software.
CMT \$199.00

Animation

3D Professional

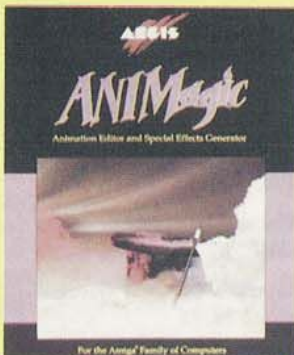
Fast, 3-D polygonal rendering and animation. Also handles fractal landscapes, trees and clouds.

CMT \$549.00

Animagic

Editing program for ANIM files to produce video style special effects, fades, wipes, dissolves, twists, turns, zooms, etc. Excellent power over DVEs. Merge or join different ANIMS. Control colour, and speed.

CMT \$119.00



Animate 3D

3D animation module (v1.216). Extended modelling and animation upgrade module for Sculpt 3D. Provides splines, animation hierarchy, motion paths, tweening.

CMT \$199.00

Animation Studio

Cartoon CEL animation with full onion skin effect. Separate draw and paint modules. Created by Disney studios. Excellent documentation. PAL support not included - but can be forced by loading PAL background

CMT \$249.00

Animator/Images

Bitmap animator with 'morph' tweening. The original 2D animator, bundled with Aegis

Images. Tweening, cut and paste screens, only NTSC.
CMT \$119.00

Architecture Design Disk Sculpt 3D

CMT \$44.95

Architecture Design Disk VideoScape

CMT \$44.95

Deluxe Photolab

HAM painting and image processing. Handles poster size images. Three programs in one.

ECP \$99.00

Design 3D

3D modelling/rendering system, user friendly interface No HAM/true ray-tracing. Good rendering with half-tone dithering of 16 colours. 3D text generator.

CMT \$99.95

Elan Performer

Control of imagery and animation in paint/animation programs using RIFF and ANIM formats. Assign imagery/ animation to keys, call to screen with a keystroke.

CMT \$89.95

Elan Performer 2.0

Control of imagery and animation in paint/animation programs using RIFF and ANIM formats. Assign imagery/ animation to keys, call to screen with a keystroke. Full PAL support, more file formats.

CMT \$199.00

Express Paint V3.0

Shaded/gradient fills with dithering, 3D perspective brushes, Colour cycling, double arc curves, unlimited fonts including ColourFonts, unlimited undo/redo, supports for shared virtual page system and more.

DFL \$199.95

Fantavision

2D animation. Output to video with professional results. Tweening, sound and music support. Player module. Ideal for beginners.

DFL \$109.95

Gallery 3D

CMT \$89.95

Graphics Starter Kit Aegis

Entry level animation package including Images, Draw, Artpak, Animator. Excellent value for money.
CMT \$119.00



Human Design Disk

Videoscape
CMT \$44.95

Images Aegis

Bitmap paint system. With Deluxe Paint, one of the two original paint programs for the Amiga. This one has not progressed, bundled free with Animator.

CMT \$49.95

Imagine

Twenty-four bit rendering techniques which allow Amiga owners to compete in the world of professional animations. Next generation in rendering animation systems for the Amiga.

CMT \$449.00

Interior Design Disk Sculpt 3D

3D object library for use with Sculpt/Animate.

CMT \$44.95

Interior Design Disk Videoscape

CMT \$44.95

Kara Animfonts 1

ChromeScript is an 8 colour, formal script in caps & lower case, comes in both a keyboarded and an AnimFont. Additional palettes included along with utility program to use ColorFonts.

CMT \$79.95

Kara Animfonts 2

Bullion is a dimensional, beveled, highlighted upper-case Gothic 8 colour font - keyboarded & Anim Font.

Also includes additional palettes and utility programs to use ColorFonts.
CMT \$79.95

Media Line Animation Backgrounds Disk

Backgrounds for incorporation into animation packages. Available in either NTSC or PAL. 32 different colour animations.

CMT \$49.95

Microbot Design Disk Videoscape

CMT \$44.95

Moviesetter

WYSIWYG animation package. Offers full palette control for up to 32 colors, color cycling, speeds up to 60 frames per second.

DFL \$95.00

Professional Draw 2.0

Structured graphics program with assorted geometric/freehand drawing tools. Includes reflection, rotation and distortion tools with full text capability. WYSIWYG

DFL \$275.00

ProMotion

CMT \$119.00

Sculpt Animate 4D

Objects can be created, joined together, rotated, duplicated, expanded to produce a complex piece

CMT \$799.00

Sculpt Animate 4D Junior

Introduction to 3D modelling.

CMT \$229.00

The Director

Animation sequencer. Allows mixing of IFF stills, sounds, instruments and ANIM animations.

CMT \$99.00

The Director Toolkit

New wipe routines, enhanced Blit utility, screen save from Director scripts, MIDI input module, standard ANIM compressor, pie chart generator, sine and cosine.

CMT \$59.95

Videoscape 3D

Creates complex 3D animations.

CMT \$229.00

Software & Hardware Guide

Videoscape Architecture Design Disk CMT \$44.95

Zootrope

Animation package including 2D "Cel" animation, delta file compression, layering drawings, powerful painting tools and text manipulation. NTSC only display. Works with Live!, Animator, Videoscape 3D, Titler IFF Images
CMT \$99.00

Books

Amiga 3D Graphic Programming in BASIC

Details techniques and algorithms used in generating 3D graphics from AmigaBASIC.
PAC \$49.95

Amiga 3D Graphics Programming CMT \$44.95

Amiga Advanced System Programmers Guide

The second volume detailing the internals of the Amiga. Includes the latest information on Kickstart and Workbench 1.3.
PAC \$69.95

Amiga Applications
Applications programmed in AmigaBASIC including educational games, personal management programs and business tools.
CMT \$29.95

Amiga BASIC Inside & Out

Tutorial on Amiga BASIC, shows in great detail all BASIC commands with plenty of example programs.
PAC \$49.95

Amiga C for Advanced Programmers

Explains C in plain English, and continues on from Amiga C for Beginners.
PAC \$69.95

Amiga C for Beginners

Explains C in plain English

using examples. Includes beginners overview, special features of C, important routines, input/output in C, tricks and tips and more
PAC \$49.95

Amiga Companion

2nd Edition. Comprehensive guide to AmigaDOS and CLI. Overview of Workbench and introduction to the CLI. Also includes full coverage of AmigaDOS 1.3, information on hard disks, CLI/SHELL commands, examples/tips
CMT \$44.95

Amiga Desktop Video Guide

Step-by-step guide for beginners and advanced artists. Includes 8 pages of full colour illustrations and list of products and manufacturers.
PAC \$49.95



Amiga Disk Drives Inside & Out

Speed up data transfer, how copy protection works, computer viruses, Workbench and the CLI DOS functions, loading, saving, sequential/random file organisation.
PAC \$49.95

Amiga for Beginners

This book takes you through the first steps on your Amiga, explaining in detail areas such as the CLI and BASIC.
PAC \$39.95

Amiga Graphics Inside & Out

A comprehensive guide to understanding and using Amiga graphics. Shows simply and in plain English how to access and harness the graphic power of your Amiga. Examples for AmigaBASIC and C.
PAC \$49.95

Amiga Hardware Reference Manual

An in-depth description of the Amiga's hardware including

tutorial on writing Assembly language programs, descriptions of the co-processor, the playfields, sprites and blitter. 8 appendices & glossary.
CMT \$44.95

Amiga Machine Code

Teach the beginner or the advanced programmer the basics of 68000 machine code.
PAC \$49.95

Amiga Machine Code Disk

PAC \$19.95

Amiga Machine Language CMT \$39.95

Amiga More Tricks & Tips

Contains detailed information on the new Workbench 1.3 and Preferences 1.3. Also contains information on modifying disk drives and extra memory.
PAC \$49.95

Amiga Printers Inside & Out

Complete guide to using and adapting various printer drivers using preferences and ensuring your printer is set-up correctly. Includes information and utility to create your own custom drivers.
PAC \$69.95

Amiga ROM Kernel Reference

Libraries and Devices. Detailed descriptions of the features and functions of Amiga ROM Kernel Manual, including Exec, Intuition and Workbench.
CMT \$59.95

Amiga System Programmers Guide

Covers EXEC structure, I/O requests, interrupts and resource management, multitasking functions.
PAC \$69.95

Amiga Tricks & Tips

Goes into more complex functions from BASIC, such as performing Library calls, extra half bright (64 colours), borderless windows, IFF graphics/sound and more.
PAC \$49.95

AmigaBASIC Inside & Out

Describes every AmigaBASIC command, includes charts, windows, pull down menus, files, mouse and speech commands.
PAC \$49.95

AmigaDOS Inside & Out

Internal design to practical applications of AmigaDOS. Includes reference section, tasks and handling, DOS editors ED and EDIT, create and use script files.
PAC \$49.95

AmigaDOS Quick Reference Guide

Details on all AmigaDOS commands and covers both versions 1.2 and 1.3.
PAC \$19.95

Computer Games Guide - Hints/Tips/Pokes

Contains information on over 400 games and adventures. Now includes complete solutions to 40 latest releases including Dream Zone, Twilight Zone, Kings Quest I & II and more.
PAC \$29.95

Desktop Video CMT \$39.95

Graphics and Sound ECP \$19.95

Kids and the Amiga

Over 30 sections with instructional notes, lessons, assignments and illustrations.
CMT \$34.95

Leisure Suit Larry Hint Book OZI \$13.95

Making Music on the Amiga

Latest release from the Abacus range.
PAC \$59.95

Mapping the Amiga

2nd Edition. Description of system calls and data structures and full description of Amiga hardware. Examples in Assembly, C and Modula 2.
CMT \$44.95

Programmers Guide to the Amiga

A complement to Amiga ROM

Software & Hardware Guide

Kernal Manuals. Source/object disks for Lattice/Manx C and Modula 2. Written in C.
CMT \$44.95

The Art of Desktop Publishing
CMT \$34.95

The Complete Desktop Publisher
CMT \$49.95

The Leisure Suit Larry Story

Follow the ups and downs in the life of Larry Laffer. Hints, tips and problem solving or the complete solution.
PAC \$29.95

Word Perfect Expert Advisor
CMT \$49.95

CAD

Board Master PCB Design
Printed Circuit board design.
CMT \$149.00

CAD Parts for Intro CAD
CMT \$39.95

Draw 2000
Structured drawing package. Latest version of Aegis medium level design program. Export files to Modeller 3D. Slow in operation with a large drawing.
CMT \$259.00

Floor Plan Construction
Design floor plans using industrial standard libraries of home and professional office fittings. Handles different scales including metric or English grid. Also enables rooms and areas to be created/arranged.
CMT \$79.95

Homebuilders CAD (non-metric)
3D design and estimating for home and small commercial construction. Good for contractors, owner/builders, set design, office design, farm design, real estate brokers, architects and cabinet makers.
CMT \$0.00

IntroCAD
User friendly, object oriented CAD program. Output laser-like results on dot matrix printers.
CMT \$99.00

IntroCAD PLUS
More powerful than IntroCAD. Adds layers, hatching, AREXX support and more drawing tools. User-definable keyboard equivalents.
CMT \$179.00

Ultra Design
Auto-dimensioning professional CAD system. Features paste-up module for plotting and scaling single or multiple drawings for output over one or several pages.
CMT \$499.00

X-CAD Designer
Automatic/user definable menus, supports standard pen plotters/dot matrix printers/external digitizer, auto dimensioning, Draw Plus files compatible. Multi-tasks. Requires 1mb
CMT \$249.00

X-CAD Professional
CMT \$489.00

X-Shell for X-CAD Designer
CMT \$279.00

Communications

GP Term
Australian designed communications package with full local support and upgrades available. Handles Videotext and ASCII. All BAUD rates, past 2400 clips downloads. Extensive ZModem support.
CMT 0.00

On-Line! Platinum
Terminal program allowing interaction of micros and mainframes to enable users to exchange information, news and data. Includes new Sadie! - two way file transfer and chat protocol.
CMT 0.00



Paragon BBS V2.07
Features multi-line capability, ZModem which supports resume and batch, on-line programs and menu compilation. Also supports Fido Networking, locked baud rates and more.
CMT 0.00

Database

Acquisition V1.3F
Full relational database which despite its immense power has suffered from annoying program faults and poor local support. Best avoided! No distributor. Upgrade available from CMB for \$15.

Data Retrieve
Use keyboard short-cuts or pull-down menus to select commands. Makes use of screen masks with different text styles, fonts, colours and graphics.
PAC \$99.00

DBMAN V
Full dBase compatible relation database - also handles dBase command files for programming. dBMAN programs operate on a large number of platforms. Ideal for the experienced dBase user. Not many Amiga features.
CMT \$399.00

InfoFile
Information management system. Store, sort and retrieve sound, graphics and text.
DFL \$99.95

Microfiche Filer Plus
Based on Microfiche type data storage system. Handles text, graphics and sounds. Intuitive access to information, easy to use setup and operation. Form based report and screen system.
CMT \$229.00

Organise!
Create a custom filing system for organizing business records, contact lists. Up to 128 fields per form and 254 bytes per field. Now bundled with The Works! Size limited to disk space and memory.
CMT \$79.00

Professional DataRetrieve
Full relational database, with programmable language (PROFIL), and mask based reports and screen forms. Import/Export options, graphic based screen design. Easy setup and gadget driven interface.
PAC \$199.00

Superbase Personal
Fully multi-file relational power, VCR style control panel, 3 ways of viewing data, set-up and change file definitions quickly, include images/sound/text.
CMT \$69.95

Superbase Personal 2
CMT \$129.00

Superbase Pro Run Time Module
CMT \$59.95

Superbase Professional V3.0
Database management language, over 250 high level commands. Report generator, Intelligent Forms Editor, extensive programmable telecommunications facilities. Recommended.
CMT \$299.00

The Securities Analyst
Stock charting and analysis program for individual investors.
CMT \$89.95

Desktop Publishing

See also Fonts.

Art Gallery 1 & 2
Two additional graphics libraries that complement PrintMaster Plus.
DFL \$49.95

Award Maker Cartoon Library
CMT \$29.95

Award Maker Education Library
CMT \$49.95

Award Maker Plus
Includes nearly 300 different award and certificate styles

Software & Hardware Guide

and allows you to insert your own graphics. A variety of borders and ability to create name files.
CMT \$39.95

Award Maker Sports Library

CMT \$49.95

BGraphics

Choose from over 20 types of charges. BGraph gives you flexibility for all your business needs. Charts include lines, column, bar, pie and text.
DFL \$289.95

City Desk V2.0

Save default even and odd pages as templates, automatic document flow as necessary, automatic hyphenation. Virtual rewrite of earlier version. Full PAL support.
CMT \$199.00

ComicArt Funny Figures

Clip art designed to be used with ComicSetter. Funny Figures cartoon characters and props in various orientations and poses.
DFL \$49.95

ComicArt Science Fiction

Clip art designed to be used with ComicSetter. Science Fiction characters and props in various orientations and poses.
DFL \$49.95

ComicArt Super Heroes

Clip art designed to be used with ComicSetter. Super Hero cartoon characters and props in various orientations and poses.
DFL \$49.95

ComicSetter

Colour Desktop Publishing for comics lovers. Object oriented interface, selection of clip art, import objects from IFF paint package or clip art.
DFL \$95.00

Compugraphic Fonts

Available in packs of three: Decorative, Designer, Publisher and Video. Can generate bitmap, outline, or postscript equivalent.
CMT \$89.95

Deluxe Print ECP \$99.00

Deluxe Print II

Assorted stationary, banners, cards etc.
ECP \$99.00

Fantasy Art Gallery for Printmaster

CMT \$49.95

Looney Tunes Bugs Bunny Cartoon Workshop

Special cartoon animator. Advanced special effects and animation techniques. Write and edit dialogue with the word balloon feature and includes characters, graphics background scenes, props/ effects and animation.
DFL \$134.95

PageSetter II

Basic DTP system.
CMT \$179.00

Pagestream V1.8

Variety in publishing programs such as color separation, rotation of text and graphics, text formatting and manipulation options.
CMT \$259.00

Pagestream V2.0

Supports AFGZA compugraphic hinted fonts, four colour separation, Adobe Type 2, IBM format fonts, advanced typographical and much more.
CMT \$359.00

Pixel Script

Print PostScript files on your preferred printer. Supports encapsulated postscript clip art. Additional fonts, clip art and utilities are available
CMT \$199.00

Printmaster Art Gallery I & II

CMT \$59.95

Printmaster Plus

Banners, greeting cards, posters, etc.
DFL \$59.95

Professional Page Templates

Contains over 50 professionally designed and pre-configured templates for Professional Page. Extremely useful for ones beginning desktop publishing.
DFL \$79.95

Professional Page 1.31

Uses AGFA Compugraphic fonts for a professional quality type. Precision typography, unparalleled graphic control and color separation are featured.
DFL \$299.95

Professional Page Outline Fonts

CMT \$289.00

Professional Clipart Vol. 1

Structured clipart for use with desktop publishing and structured drawing programs. Includes images on Australian themes.
DTU \$50.00

Professional Scanlab

Controls the Sharp Jx-300, JX-450 and JX-600 colour scanners with Amiga 2000 and above. Global colour correction, brightness and contrast controls, positive/negative conversion, palette selection, colour separations. Includes card, cable and software.
DTU \$1400.00

ReSEP

Merges 24 bitplane colour images with documents created with Pro. Page. Edits the PostScript output of Pro. Page colour separations, removing the 4096 colour image and inserting 16 million colours created by Pro. Scanlab or the Art Department.
DTU \$80.00

Publishers' Choice

Contains graphics, wordprocessing, page layout all in one multi-tasking environment. Output to any graphics cable printer, including all dot matrix and laser printers with typesetting quality using Laserscript.
DFL \$199.95

Saxon Publisher

Incorporates standard desktop publishing features and more. Fast, efficient and stable.
CMT \$599.00

Super Clips 1

Professional Page clip art. Also available in EPS format. Useful for business, signs, borders, banners. Compatible

with Pagestream 2.0
CMT \$49.95

Super Clips 2

Professional Page clip art. Also available in EPS format. Useful for business, signs, borders, banners. Compatible with Pagestream 2.0
CMT \$49.95

The Art Department

Full image processing in up to 24-bit colour. Colour separation, GAMMA correction, digital scaling, swap between screen resolutions. Handles Most picture formats including A-HAM. Various file LOADers avail.
DTU \$50.00



Title Page

Page Titler.
CMT \$179.00

Desktop Video

3D Text Animator

Simple 3-D text animation for video titling.
CMT \$79.95

Broadcast Titler II - PAL

2160 x 1440 effective res, displays multiple IFF pictures and colour fonts, accepts popular Amiga and colour fonts. Full 736 x 480 overscan, 4096 palette.
CMT \$399.00

Credit Text Scroller

Handles simple scrolling credit text for video work or information screen. Memory Hungry!
CMT \$59.95

Deluxe Productions (NTSC)

ECP \$99.00

Software & Hardware Guide

Digi-View Camera

WV1410Panasonic camera for use with Digi-View.
MAT \$695.00

Digi-View III

Same software as Digi-View Gold, however, the interface is different. Suits A1000 only.
CMT \$299.00

Modeller 3D

3D object editor - can be used with Sculpt 3D, Video-scape 3D.
CMT \$119.00

Pageflipper Plus FX

Smooth, fast animation in any resolution, powerful compression. Add/Edit static or dynamic backgrounds/foregrounds, library of preset effects (transitions)
CMT \$199.00

Pro Video Alternate Font Set 4

Broadcast quality fonts for Pro Video CGI or Pro Video Plus. Headline, Nova, Optic and Network.
CMT \$119.00

Pro Video Alternate Font Set 1

Broadcast quality fonts. Only for Pro Video Plus or Pro Video CGI. Showtime, Competition, Bulletin and Future.
CMT \$119.00

Pro Video Alternate Font Set 2

Broadcast quality fonts for Pro Video CGI or Pro Video Plus. Encore, Pacific, Europa and Computer.
CMT \$119.00

Pro Video Alternate Font Set 3

Broadcast quality fonts for Pro Video CGI or Pro Video Plus. Coup, Electric, Fancy and Tubular.
CMT \$119.00

Pro Video Plus (PAL)

Video character generator. Hi-res video with expanded screen size of 672 horizontal pixels by 500 scan lines. Requires an Amiga with Kickstart 1.2 and 1 meg with at least 410K of chip & 400k fast RAM. Second drive rec.
CMT \$359.00

Pro Video Post (PAL)

Provides full screen

manipulation tools. With unique keyboard user interface, full hi-res overscan screens can be reduced, enlarged and manipulated. Screen res of 720 x 480.
CMT \$459.00

TV Show V2.0

Slide show generator. Add speech and now supports ANIM's and digitised sound, AmigaDOS V2 compatible. 1MB RAM, 2 disk drives or hard drive recommended.
CMT \$119.95

TV Text

Produce lettering and graphics for video titling and desktop presentations. Contains program disk and also Zuma Fonts Volumes 1 - 3, and User's Guide. Full IFF compatibility. 1MB RAM, 2 drives/hard drive rec.
CMT \$0.00

TV Text Professional

Produce lettering and graphics for video titling and desktop presentations. Contains program disk and also Zuma Fonts Volumes 1 - 3, and User's Guide. Full IFF compatibility. 1MB RAM, 2 drives/hard drive rec.
CMT \$189.00

Video Effects 3D (PAL)

3D perspective special effects generator. Create smooth 3D effects using 2D hi-res IFF pictures. Smooth effects playback at 60 field/sec.
CMT \$339.00

VideoTitrer

Video titling and special effects.
CMT \$169.00

Vidi Amiga

High speed/accuracy frame grabber. Takes a video image from a camera/VCR or any video source in Real Time. No pausing necessary and grabs in 16 shades of grey. Includes Vidichrome colourizing software free.
PAC \$399.00

Vidi RGB Splitter

Allows you to digitise in full HAM colour without use of colour filters. Grabs a full colour image in under one second. Fully compatible with Digi View
PAC \$299.00

Vidichrome

Colour enhancer for Vidi Amiga. Provides additional software to use Vidi hardware for digitising HAM images. Requires use of colour filters (included) or optional colour splitter
PAC Free with Vidi Amiga

Education

Adventures of Sinbad

Animated graphics are used to capture the child's interest and imagination while building vocabulary skills. Over 600 reading comprehension and synonym/ antonym questions are used to enhance their skills.
DFL \$69.95

Aesop's Fables

Fables depicted with graphics and easy to read text. Includes four different learning modules.
DFL \$39.95

Animal Kingdom

Teaches children about the animal kingdom while developing their language arts, reading comprehension, discrimination and memory skills. Contains six activities.
DFL \$59.95

Antonyms

Covers words that have opposite meaning using the Amiga speech synthesis capabilities. Soon to be released.
PAC \$0.00

Atomix

Slide molecules around until they form the required atom.
PAC \$49.95

Basic Grammar

Suite of five programs covering nouns, verbs, adjectives, adverbs, prepositions and more by using the Amiga speech ability to re-inforce learning. Ages 6 - 9.
PAC \$49.95

Beginning German

First in a series of Language Education courses. Introduces the student to rudimentary German vocabulary and syntax using

speech synthesis. Soon to be released.

PAC \$0.00

Better Maths

A range of topics from fractions to equations with improved graphics, sound effects and playability. Ages 12 - 16.
PAC \$59.95

Better Spelling

Covers punctuation, grammar usage and more. Ages 8 to adult.
PAC \$59.95

Birds 'N Bees

Designed to teach children about themselves and their development. Access levels are set by parents. Explains sexual development and goes into hazards such as AIDS, sexual harassment and abuse and their reactions to it.
PAC \$39.95

Chicken Little

DFL \$39.95

Con-Sound-Tration

Three games with four skill levels, over 80 different graphics and digitized sounds. Helps build important 1/2 players, randomly generated games
DFL \$39.95

Decimal Dungeon

Add, subtract, multiply or divide decimals, convert them to percents or fractions or vice versa to escape the crystal caverns of the dungeon master. Incorrect answers are given full screen explanations.
DFL \$69.95

Designasaurus

Dinosaurs come alive with sights and sounds. Create your own prehistoric giant. Print out 12 different dinosaurs.
CMT \$74.95

Dinosaur Discovery

OZI \$49.95

Dinosaurs are Forever

Build dinosaurs, print out, colour in, experiment with simulator. Digitised roars add atmosphere.
PAC \$69.95

Software & Hardware Guide

Discover Alphabet

Covers topics including letters, abbreviations and word sizes. Ages 6 and up.
PAC \$39.95

Discover Chemistry

Covers periodic tables, densities and more. Consists of six sub-programs. Ages 12 and up.
PAC \$39.95

Discover Maths

This package covers decimals, algebraic equations, quadratic equations and more. Designed for slightly older children, ages 10 and up.
PAC \$39.95

Discover Numbers

This package consists of six programs covering topics such as simple addition, subtraction and the concepts of multiplication. Ages 6 and up.
PAC \$39.95

Doug's Math Aquarium

Mathematical formulae displayed graphically. Full colour images are produced from simple formulae.
CMT \$119.00

Electric Crayons At the Zoo

Colouring in program featuring drawings of Zoo animals, can also print out calendars and banners.
PAC \$49.95

Electric Crayons Letters for You

Features line art drawings of the letters of the alphabet with corresponding pictures to fill in. Also can print out calendars.
PAC \$49.95

Electric Crayons Numbers Count

Colouring in program featuring line art drawings ready to fill in. Print out calendars using the program's graphics.
PAC \$49.95

Fraction Action

Includes a variety of addition, subtraction, multiplication and division problems on 3 difficulty levels. You must escape from the Mad Professor's Mansion by

providing correct answers.
DFL \$69.95

Fun School 2

Age 2 onwards. Animation and sound effects are used to present multiple subjects in a game style format.
PAC \$49.95



Fun School 3

Three separate programs suitable for 3 - 5 years, 5 - 7 years, 8 and up. Features graphics, sound effects and rewards for the child's achievement. Written in AMOS BASIC.
PAC \$54.95

Introducing Maps

Aid to interpreting varying types of maps. Features digitised graphics. Ages 9 - 12.
PAC \$89.95

Junior Typist

Teaches children the correct hand and finger positions and drills them in letter, word and phrase typing. Ages 8 to adult.
PAC \$59.95

Kid Talk

Reading and writing instructions with built-in speech.
OZI \$39.95

Kinderama

Includes five interactive programs to introduce young children to the Amiga.
DFL \$69.95

Land of the Unicorn

Helps develop thinking and reasoning skills while developing vocabularies at the same time. A variety of educational activities and a interactive fantasy game provide a captivating learning environment.
DFL \$64.95

LCL Micro English

Advanced, revisionary

English language program including an audio tape to test responses to spoken English as well and written English.
PAC \$49.95

LCL Micro Maths

Advanced mathematics program for the older student (Year 9 - 11). Consists of 24 separate programs covering a diverse range of topics including Fractions Percentages, Algebra, Polynomials and binomials.
PAC \$49.95

Lets Spell at Home

Teaches letter recognition and spelling with the help of computer graphics and speech synthesis. French version also available.
PAC \$49.95

Lets Spell at the Shops

Teaches letter recognition and spelling with the aid of graphics and speech synthesis. English version, French also available.
PAC \$49.95

Magic Maths

Covers simple addition and subtraction. Mouse driven. Ages 4 - 8.
PAC \$59.95

Magical Myths

Includes animated stories and over 600 reading comprehension and vocabulary questions as well as a mathematical match game for memory building and myth maker for word processing skills.
DFL \$69.95

Match-It

Teaches young children basic colours and shapes using interactive games and tutorials.
DFL \$49.95

Math Blaster Plus!

Contains five learning activities covering over 750 basic maths facts.
DFL \$69.95

Math Talk

Talking tutor.
OZI \$39.95

Math Talk Fractions

OZI \$39.95

Math Wizard

Four educational games with

animated graphics to make learning maths fun.
DFL \$69.95

Math-A-Magician

Interactive maths game designed for all ages. Different levels of difficulty are integrated into the program including addition, subtraction, multiplication/ addition tables.
DFL \$49.95

Maths Mania

Covers multiplication and division and can be operated with the mouse for ease of use. Ages 8 - 12.
PAC \$59.95

Maths Master

Australian maths educational package for grades Kindergarten to 6.
RRP \$50.00

Medal Winner

Game based multiplication tutorial. Ages 6 - 9.
PAC \$49.95

Mega Maths

Step-by-step self tuition and revision mathematics course. Covers 24 topics including straight line geometry, circle geometry, polynomials, logarithms, trigonometry, tangents, binomial theory and more.
PAC \$49.95



Micro French

Using a combination of computer programs and voice cassettes, Micro French is a complete tutorial package designed to introduce the French language. Covers written and also punctuation and comprehension.
PAC \$49.95

Mixed Up Mother Goose

OZI \$49.95

My Paint

Includes 28 drawings, animated icon menus, various brush modes, color cycle effects, more colouring book disks available, sampled sounds for each picture mode.

CMT \$69.95

Planet Probe

Full tutorial on the solar system and planets. Features brilliant graphics and also includes a quiz. Ages 9 - 12.

PAC \$49.95

Primary Maths

Covers from 3rd class to secondary school. Topics include simple addition/subtraction and number recognition through to percentages, fractions and algebra.

PAC \$49.95

Puzzle Book 1

Collection of 6 programs with variable levels of difficulty designed to test logic, maths and word skills.

PAC \$CALL

Puzzle Storybook

OZI \$49.95

Read & Rhyme

Four interactive learning activities - Rhyming Rockets, Flying Saucer, Alpha Blast and Rhyming Challenge.

DFL \$69.95

Read A Rama

Contains five programs. The child is helped to build discrimination and reading skills by being asked by the computer to match specific pictures. In Spell-a-Rama the child must correctly spell the pictures.

DFL \$69.95

Rhyming Notebook

OZI \$49.95

SimCity

Simulation strategy without the violence of war games. Loaded with animation and detailed sound effects. School Version available

\$109.95

DFL \$89.95

SimCity Terrain Editor

Add-on that allows you to custom design land forms for use with SimCity.

DFL \$34.95

Space Maths

This program reinforces and teaches mathematical principles while the user enjoys an interactive game.

PAC \$49.95

Spell Book

Introduce children to different concepts within spelling. Uses all lower case lettering but also includes multi-syllabic and non-phonetic words. Ages 7 up.

PAC \$39.95

Spellbound

Combines animation, graphics, music and digitised speech to create a learning atmosphere. Teaches spelling in a fun, interactive way. Designed to teach sight recognition skills.

DFL \$59.95

Speller Bee

OZI \$39.95

Spelling Detective Game

You are a great spelling detective hunting down the 100 most commonly misspelled words in the English language. Soon to be released.

PAC \$0.00

Stories in Reasoning

Deals with logic and comprehension, inferences and conclusions from the written word. Soon to be released.

PAC \$0.00

Sum-It Mountain

Mental arithmetic trainer, ages 6 - 9. Graphic based mountain race which is played by answering correctly maths problems.

PAC \$49.95

Sunny Side Up

Ages 9 - 12. The subject of reproduction is discussed using the example of a chicken farm and stock.

PAC \$49.95

Take Ten

Reading and comprehension for ages 6 - 9. Consists of a story book and a program. The program is a comprehension test based on the story book. The stories are about life as a child and

problems they face.

PAC \$69.95

Tales from the Arabian Nights

Double sided disk includes many famous stories from The Arabian Nights. Includes animated graphics. Enhances reading comprehension, creative writing and language art skills.

DFL \$69.95

The Talking Colouring Book

Teaches colours and shapes through high quality voice, predefined pictures, also has a graphics editor.

CMT \$49.95

The Three Bears

Children must use logic forward thinking and planning to achieve a solution to this fairy tale based graphic adventure.

PAC \$CALL

The Word Master

Includes four different educational activities to build word power skills. Vocabulary Test, Master's Review, Vocabulary Challenge and Master's Maze.

DFL \$69.95

Things to do With Words

Show children how words can be used in different situations. The three part program shows anagrams, "hidden words" and jumbled sentences.

PAC \$39.95

Things to do With Numbers

Show children different ways to apply numbers to problems. Covers numerals as a measurement of time, numbers as map co-ordinates and a number as a component of another number.

PAC \$39.95

Three Bears

Search with Mummy and Daddy Bear for Baby Bear. Use of logic, forward thinking and rationalisation to achieve a solution. Ages 5 - 10.

PAC \$59.95

Ugly Duckling

DFL \$39.95

Vocabulary

Improvement Tutor

Interactive program designed to utilise the Amiga's speech capabilities to improve vocabulary and word definition skills.

PAC \$0.00

Where in Europe is Carmen Sandiego

This time chase Carmen Sandiego around Europe. Menu-driven with colourful animation. School Version also available

\$104.95

DFL \$84.95

Where in the USA is Carmen Sandiego

This time Carmen is on the loose in the USA. School Version available

\$104.95

DFL \$84.95

Where in the World is Carmen Sandiego

Chase Carmen and her thieves all over the world. Learn geography, history and culture. School Version also available

\$104.95

DFL \$84.95

Words That Sound Alike

Deals with synonyms and uses Amiga speech capabilities to full advantage. Soon to be released.

PAC \$0.00

Fonts

Media Line Fonts 1

Designed for use in video, graphics and desktop publishing and animation. Contains 9 different bitmap fonts.

CMT \$49.95

Pagestream Fonts 1

(DM & PS)Spokane, Devoll, Thames

CMT \$54.95

Pagestream Fonts 2

(DM & PS)Elegance, Roman Bookface, Westside

CMT \$54.95

Pagestream Fonts 3

(Dot Matrix) Avante Garde, Bookman, Chancery

CMT \$54.95

Pagestream Fonts 4

(Dot Matrix) Courier, Palatino, Symbols

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CMT \$54.95

Pagestream Fonts 5

(Dot Matrix) Schoolbook, Helvetica Narr., Dingbats
CMT \$54.95

Pagestream Fonts 6

(Dot Matrix) Fab Fifties, SpeakEasy, Stencil Caps
CMT \$54.95

Pagestream Fonts 7

(Dot Matrix) Mars One, Oddballs, Paint Brush
CMT \$54.95

Pagestream Fonts 8

(Dot Matrix) AutoBahn, Leroy Script, Crackers
CMT \$54.95

Pagestream Fonts 9

(Dot Matrix) Bodoni, Quadrant, Romanopolis
CMT \$54.95

Pagestream Fonts 10

(Dot Matrix) Meteor, College, Scrollipsis
CMT \$54.95

Pagestream Fonts 11

(Dot Matrix) Bengal, Trellis, Uncial
CMT \$54.95

Pagestream Fonts 12

(Dot Matrix) Deco, Quill, Blaster Chrome
CMT \$54.95

Pagestream Fonts 13

(Dot Matrix) Cicorice, Koala, Floaters
CMT \$54.95

Pagestream Fonts 14

(Dot Matrix) Colliseum, Tripoli, Anchovies
CMT \$54.95

Pagestream Fonts 15

(Dot Matrix) Far Easy, Junita, Merlin
CMT \$54.95

Pagestream Fonts 16

(Dot Matrix) 30 Wt Solid Round, Antiquity, Lincoln
CMT \$54.95

Pagestream Fonts A

(Post Script) Helvetica, Helvetica Narrow, Avante Garde, Chancery, Courier, Times, Bookman, Palatino, Schoolbook and Symbols.
CMT \$54.95

Pagestream Fonts C

(Post Script) Elegance, West Side, Roman Bookface
CMT \$54.95

Pagestream Forms Vol. 1

CMT \$54.95

ProWrite Pro Fonts 1

Font collection for use with ProWrite V2.0. Ten Professional fonts.
CMT \$49.95

ProWrite Pro Fonts 2

Font collection for use with ProWrite V2.0. Twenty-seven decorative fonts and dingbats.
CMT \$49.95

Zuma Fonts Vol 2

Video presentation graphics. Each volume contains three different typestyles ranging in size from 20 to 100 points. Bitmapped typefaces for use with any IFF compatible program which uses Amiga fonts. Req. 512k.
CMT \$39.95

Zuma Fonts Vol 3

Video presentation graphics. Each volume contains three different typestyles ranging in size from 20 to 100 points. Coop, Script and Fast Fonts. Requires 512k RAM.
CMT \$39.95

Zuma Fonts Vol 4

Deco, Devine and Draft Fonts. Requires 512k RAM.
CMT \$39.95

Graphics

Analytic Art

Fractal painting system. Uses mathematical expressions to generate pictures.
CMT \$99.00

Butcher II

Graphics utilities. Resolution conversion. Pixelation, mosaic tiling of pictures, etc. Image processing, format interchange.
CMT \$59.95

Deluxe Help for DigiPaint

CMT \$54.95

Deluxe Help for Photon Paint

CMT \$49.95

Deluxe Library: Art Parts Vol 1

Variety of clip art for use in any program using IFF

bitmaps.

ECP \$45.95

Deluxe Library: Art Parts Vol 2

Variety of clip art for use in any program using IFF bitmaps.
ECP \$45.95

Deluxe Library: Seasons and Holidays

Variety of clip art for use in any program using IFF bitmaps.
ECP \$45.95

Digi-Paint V3.0

HAM paint system. Original omnicoLOUR painting package to appear in version 3. 4096 colours on screen with usual tools. Good special effects tools.
CMT \$299.00



Deluxe Paint III

32 colour painting. All resolutions, many brush distortion, rotate and scaling effects, smoothing and scaling, shading dithered or patterned fills, etc. Excellent 2D animation capabilities.
ECP \$99.00

Deluxe Paint II

ECP \$99.00

Digimate 3D

Interactive anim format playback from RAM, hard drive or floppy. Anim processing and conversion from gadget driven interface, HAM support.
CMT \$59.95

Dragons Lair Demo

Dragons Lair Demonstration disk - for game Dragons Lair
PRI \$5.00

Forms in Flight II

Allows creation of high quality images, then use the images to create animations. Import objects using Interchange. Includes surface patches, texture mapping.
CMT \$79.95

FusionPaint

Create stunning graphics, supports all Amiga graphics modes.
DFL \$99.95

Future Design Disk Sculpt 3D

3D object library for use with Sculpt/Animate. Build spacecraft, space stations, bases, vehicles, robots and androids to create a future world.
CMT \$44.95

Future Design Disk Videoscape

3D object library for use with Videoscape. Build spacecraft, space stations, bases, vehicles, robots and androids to create a future world.
CMT \$44.95

GraphiCraft

CBM \$99.00

H.A.M. It Up V1.1

Powerful HAM processing.
CMT \$64.95



Human Design Disk Sculpt 3D

3D object library of skeletal human structures. Disk includes complete male/female prototypes in skeletal form.
CMT \$44.95

Human Design Disk Turbo Silver

CMT \$44.95

Illuminations: Photon Paint PRO

CMT \$0.00

Imagemaster

CMT \$0.00

Interchange: Sculpt/Videoscape

Allows sharing objects between 3D modeling programs. Includes modules for Sculpt 3D, Videoscape 3D formats. Expandable through additional modules for other formats and object manipulation tools.
CMT \$89.95

Interfont: Sculpt/Videoscape

Automatically create text objects for 3D modeling and desktop publishing programs. Includes InterChange and modules for Sculpt 3D/Videoscape 3D/Aegis Draw Plus. V1.2 - 20 different fonts & Prof. Draw Convert. Module
CMT \$169.00

Interior Design Disk Turbo Silver

Lights! Camera! Action!
Allows the combination of ANIM-style animations, IFF pictures, Aegis SONIX scores and IFF sampled sounds into a complete presentation. Ideal for businesses, trade shows, educational presentations, and more.
CMT \$89.95

Media Line Clip Art Disk 1

More than 200 clip art pictures. A show utility to add to DTP programs that support IFF graphics. Can be used in all paint programs for resizing and modification.
CMT \$44.95

Microbot Design Disk Sculpt 3D

3D object library for use with Sculpt/Animate. Advanced robotic designs and components. Details, surrealistic modules, comes complete with blueprints/models/tips.
CMT \$44.95

Microbot Design Disk Turbo Silver

Photon Paint II
Contour mapping, stretch option, 4,096 colour palette, page flipper, magnification, rub-through, pantograph, blending, colourization, air, brush, stencil and more.
CMT \$129.00

Pixmate

Image processing and enhancement tools.
CMT \$79.95

Sculpt Architecture Design Disk

3D object library for use with Sculpt/Animate. Component parts include doors, windows,

arches, roofs, walls, stairways and architectural constructs.
CMT \$44.95

Spritz

Smart-link features allow Spritz to communicate with programs like Express Paint. Send/receive images, brushes and palettes. Simulate animations using 6 ranges of colour cycling and much more.
DFL \$99.95

Structured ClipArt

for use with Professional Draw
DFL \$79.95

Turbo Silver 3D

Create 3D, ray-traced animations, up to 512 frames per animation. Play back 6-60 frames per sec., ray-trace whole screens in 4 minutes. Supports Genlock/overscan. Includes Terrain.
CMT \$199.00



Turbo Silver Future Design Disk

Hardware
ACRE AGS-20
External Composite, variable colour key. Analogue/digital switch, dissolve, override key switch. Atari or Amiga RGB monitor connection. BNC connectors
ACI \$899

3.5 880Kb External Disk Drive

With switch and pass through.
MATRIX \$199.00

3.5 External Disk Drive

Ultra slim, ultra quiet.
MATRIX \$249.00

5.25 360/880Kb External Disk Drive

40/80 track switchable.
MATRIX \$299.00

A501 Clones

With enable switch and battery backed clock/calendar.
PP \$129.00

Acudat 3.5" Disk Drive

An external disk drive that has an on/off switch, is daisy chainable and boasts the usual slim-line construction expected from third party drives.
H&R \$249.00

Amiga 1000 parallel printer cable

Enables connection to a parallel printer
CMT \$35.00

Amiga 4-Way Joystick Adaptor

Enables four joysticks to be connected simultaneously for games which support four players
CMT \$24.95

Amiga 500 & 2000

Internal Disk Drive
MATRIX \$169.00

Amiga M-4 Mouse

Specifically designed mouse to withstand constant handling. Uses brass rollers to eliminate the rusting problem common on other mouses.
PAC \$79.95

ColourBurst

24-bit, for all Amigas, Plugs into RGB port. Por quality, full RGB output, 16 million colours. Supports major paint programs.
MAS \$CALL

Commodore Genlock

Internal Composite, RCA connectors, simple toggle switch control.
CBM \$349

Digi-Droid

Rotates Digi-View colour wheel.
OZI \$159.00

Digi-View Gender Changer

A500/2000
CMT \$59.95

Disk Drive 3.5" Roctec

External disk drive. Short supply.
CMT \$299.00

Disk Drive Head Cleaner ECP \$6.95

Double Talk

A full AppleTalk Network system allowing Amiga and Macintosh computers to share information and resources or only Amiga Network to operate at double speed.
CMT \$0.00

Dual serial Board

Additional 2 high-speed serial ports. Allows use of all serial ports simultaneously. Fully compatible "serial.device" driver. DOS handlers provided to allow control over the expansion serial ports. Access from standard programs
DTU \$355

Easyl A2000

Driver software and drawing package included. Menu bar configurable for paint program options. Model specific versions.
CMT \$899.00

Easyl A500

Model specific. As per A2000.
CMT \$799.00

Fireball A2000

True DMA SCSI Controller / Hard card. Auto-boots, Automounts
MAS \$CALL

Flicker Master

Works with all Amiga models, greatly reduces interlace flicker. Attaches easily to monitor and improves control in all resolutions.
CMT \$39.95

GVP 32 Bit RAM Exp. for A2000 Acc.

Bds4 or 8 Mb.
PP \$0.00

GVP A2000 Acc. Bds 4Mb 32 Bit RAM

Hard drives 0 - 80Mb. RAM boards use special high-speed Nibble-mode dram SIMMS to support 68030 burst mode. A3001 is 28Mhz, A3033 is 33Mhz and A3050 is 50Mhz. Hard drive interface is AT not SCSI but very fast.
PP \$0.00

GVP A2000 Accelerator Boards

28Mhz - 68882 (28Mhz)

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option.

PP \$0.00

GVP Impact A3001 Upgrade Kit

Includes a 68030 CPU, 68882 FPU, 4 or 8mb of 32-bit wide RAM and a built-in Auto-booting High Performance Hard Disk Controller. Available with 40, 80 and 200mb hard drives.
PP \$0.00

GVP Series II SCSI Hard Card

No RAM Expansion option on this card. High speed SCSI hard drive controller using new GVP FastROM.
PP \$0.00

GVP Series II SCSI Hard Card Plus

No RAM Expansion option on this card. High speed SCSI hard drive controller using new GVP FaaastROM. Room for up to 8mb SIMM Memory.
PP \$0.00

HES A500 512KB Ram expander card

Expands memory to over 1MB. Simple to install, real time clock calendar, internal enable switch.

HES \$CALL

GVP Series II SCSI HD - A500 Unit

No RAM Expansion option on this card. High speed SCSI hard drive controller using new GVP FastROM. Room for up to 8mb SIMM Memory. Similar to the above HC8 but for the A500.

PP \$0.00

Halo Scanner

ECP \$493.95

Hi-Tek Monitor Filter

Made from optical quality 3mm acrylic. Eliminates monitor glare, protects from eye strain, makes interlace mode viable.

HIT \$CALL

Migraph hand scanner

C/W touch up software.
HPD \$CALL

Hurricane Accelerator Board

CMT \$2465.00

In-board A500

Zero K. Internal.
CMT \$679.00

In-board A500

2Mb internal.
CMT \$2999.00

Infrared Mouse

Cordless mouse for all Amigas.

MAT \$149.00

Joystick Extension cable

CMT \$10.50

Lightpen Inkwell 184A

Works with mouse/keyboard, can be combined with EasyL. Supports Amiga 500, 1000, 2000 and A2000. Operates in interlace and non-interlace overscan mode.

CMT \$249.00

M.A.S.T. Removable Hard Drive

44MB. Syquest or Ricoh mechanism in M.A.S.T.'s own casing. 12 month warranty.

MAS \$CALL

M.A.S.T. CD Rom

Over 600MB Toshiba mechanism inside M.A.S.T.'s own casing. Power supply and software included

MAS \$CALL

Master 5.25 Disk Drive

Double-sided, double-density drive with 655360 bytes of data storage capacity, 100% compatible with Amiga, 40/80 track select, dual colour LED, 1yr warranty.

MIC \$399.00

Microbotics A2000 8Mb Memory Board

8-UP - 0Mb to 8Mb.

PP \$0.00

Micromegs A500

512 k memory for A501 expansion slot, clock and calendar. On-off switch. 12 month warranty.

MAS \$CALL

Minimegs A500/A1000

2MB external memory. Fast ram, Zero wait states, Autoconfigures.

MAS \$CALL

Minigen

Genlock A500/A2000
CMT \$499.00

Minimegs

2 Megabytes of external RAM for A500/A1000. Auto configure, low power, 1 Meg DRAMs, RAM tachometer, auto configure LED, compatible with A501.

MAS \$0.00

Mouse Master

Solves swapping of mouse and joystick cables, stops wear and tear on cables and connectors.

CMT \$69.95

Neriki Desktop/Professional

PAL and NTSC models available. Sit under monitor. Front panel fade and key switch. BNC connections. Loop through for monitor. 5.5Mhz bandwidth. 12 months warranty. Various models available for specific requirements. Australian made.

FDR \$CALL

Octoplus A2000

OMB internal memory. Fast ram, Zero wait states, Autoconfigures. 12 month warranty.

MAS \$CALL

Overdrive A2000

CMT \$499.00

Panasonic WV1410 Video Camera

CMT \$699.00

Parallel Adapter

OZI \$52.95

Parallel Printer cable 2m

CMT \$19.95

Parallel Printer cable extender F/F

CMT \$35.00

Parallel Printer Extn. cbl. MtoM 3m

CMT \$35.00

Perfect Sound A500/A2000 Ver 3.0

A two channel stereo audio digitiser with complete sound editing software and library of pre-recorded sounds. Compatible with most musical programs.

CMT \$199.00

Pocket Tiger

45MB and 102MB SCSI hard drives in pocket size casing.
MAS \$CALL

Portable SCSI Interface

Suits A500, 1000, 2000, 3000 plugs into parallel port. Pass-thru for seven SCSI devices.

MAS \$CALL

Starblazer - A500/A1000

SCSI interface, 14Mhz/68000, 25Mhz/68030 accelerator, 16/32 bit wide, 8MB of Fast Ram in small external box. Switchable, Autoboots, Automounts.

MAS \$CALL

Senator 3.5 Inch Disk Drive

Double-sided, double-density drive with 1Mb of unformatted storage capacity, fully compatible with Amiga, device select, full 1 year warranty.

HPD \$299.00

Soft Eyes 30 x 22.5 cm

Screen filter.

ECP \$27.95

Soft Eyes 35.5 x 25.5 cm

Screen filter

ECP \$32.95

Spirit Technology A500 Internal Memory

SIN 500 - .0mb to 2mb.
PP \$00.00

Spirit Technology XRAM 8mb Ext. Board

For A500 or A1000 (card fits A2000). 0mb to 8 mb. Inside the high quality chassis is a 2000 compatible card for those who might upgrade. External power supply optional.

PP \$0.00

Supra 20Mb

Hard disk for A1000.
CMT \$1899.00



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Supra 20Mb

Hard disk for A500. Amiga Bus pass-through for unlimited expansion. Access time as low as 11ms, data transfer of over 500K/sec. Full support WB 1.3.
CMT \$1899.00

Tiny Tiger II

portable SCSI hard drive 45MB, 90MB, 136MB and 182MB Slimline,
MAS \$CALL

Twin Drive

Two 3.5" drives in slimline case. Same features as Unidrive
MAS \$CALL

Unidrive

Slimline 3.5" no-click drive, pass thru, on-off switch. Upgradable to Enhanced Unidrive. 12 month warranty.
MAS \$CALL

Unidrive Enhanced

Slimline 3.5" drive, track LED display, Hardware virus protection
MAS \$CALL

VidTech VideoMaster

External Super-VHS and composite, PAL or NTSC. Dissolve control bars. Wipe switches. RGB Splitter for digitising. RGB processor. Transcoding. Internal sync. Amiga RGB bypass. Keyout. One year warranty.
CCS \$2495

VidTech Scanlock

External Super-VHS and composite, glitch free cut to Amiga/Reference, fade control bars, fade to black. RGB/S-VHS/Composite Amiga monitor support. Full 5.5Mhz bandwidth. BNC connectors. Fits under monitor. 12 month warranty.
CCS \$1895

XEL 1Mb RAM expander

XEL \$299

XEL Hard Drive

External A500/A1000 hard drive interface with 1Mb of RAM. Available in various drive configurations, with 30 meg hard drive.
XEL \$899.00

X-Specs 3D Glasses

Includes software
CMT \$199.00

Zydec Drive

3.5 external drive for Amiga C/W switch and thru port.
HPD \$0.00

Hardware Emulators

AMax

Employs hardware and software to emulate a Mac. Includes Mac ROMS. External Mac drive recommended. No AppleTalk or hard drive support.
CMT \$599.00

AMax II

Employs hardware and software to emulate a Mac. Requires Mac ROMS. External Mac drive recommended. AppleTalk and hard drive support. (Software only upgrade to A-Max)
CMT \$389.00

Amig - a - Tosh

3.5" Macintosh compatible floppy drive for use with AMAX Mac emulator.
MAS \$CALL

Brainstorm

powerful Atari ST emulator. Software and Hardware.
MAS \$CALL

KCS Power PC Board

Run MS-Dos software on the Amiga. Board plugs into expansion slot underneath the computer.
HPD \$CALL

Vortex AT Emulator

Run IBM software six times faster than the Bridgeboard. Supports hard drives. 640K in MS-Dos mode
FNH \$CALL

Integrated

Gold Disk Office

includes Write, Calc, Graph, File and Page (word-processor, spreadsheet, Database, DTP).
DFL \$CALL

Publishers Choice

Basic DTP system - Kindwords V2.0 plus PageSetter.
DFL \$199.95

The Works!

Scribble!, Analyze!, Organize! all in one package.
CMT \$149.00

The Works! Platinum Edition

104,000+ spelling checker, 470,000+ thesaurus, prints IFF graphics, spreadsheet module, database module, telecommunications module, sideways print utility.
CMT \$199.00

Joysticks

Competition Pro 2000

OZI \$19.95

Competition Pro 1000

OZI \$29.95

Competition Pro 5000

Sturdy design, see-thru body and steel shaft with micro switches. Also has non-skid feet.
OZI \$39.95

Joystick 200

OZI \$29.95

Starblazer

Compact and sturdy design. Micro-switch fire buttons, ergonomic pistol grip, non-slip suction cups, 180 degree swivel handle, 3-way switch.
MUL \$CALL

Starcursor

Solid construction, 3 yr guarantee, 3 fire buttons, suction caps, quality switches. Recommended! (Split button and 8/4 way selector)
MUL \$4.95

Terminator

"The Final Joystick"
OZI \$39.95

Languages

AC BASIC

Compiler, fast with graphics. Indexed documentation.

Compatible with AmigaBASIC interpreter, runs up to 50% faster.

CMT \$279.00

AC Fortran

Implemented to ANSI 77 Fortran standard. Includes debugger, linker, library manager, runtime library, IEEE math and C interface.
CMT \$419.00

AMOS

Games creator and extended BASIC like language. Full structure programming support. Control over many graphics functions and SOUNDTRACKER music too. Ideal for education, programming and home.
PAC \$135.00

AREXX V1.06

Task intercommunication port - will be standard in WB1.4. Enables one application to send commands to another - integrate programs of a similar nature.
CMT \$74.95

Assempro

Integrated assembler, disassembler, debugger & editor. Online help function showing addresses and default parameters for operating system calls.
PAC \$169.00

Blitz Basic

Alternative fully integrated BASIC. Faster and includes built in compiler. Commands to handle everything you need to make a top class game
MAS \$149

G.F.A. BASIC 3.5

Includes over 300 commands, inline C and assembler commands, extensive Amiga commands with sub-menus and built-in file requester and runtime interpreter.
CMT \$139.00



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G.F.A. BASIC Compiler
CMT \$79.95

Devpac V2.0
Edit/Assemble/Debug.
Assemble source up to 70,000 lines per minute, editor runs under intuition - menu/ keyboard control. Requires Kickstart 1.2 or later.
CMT \$149.00

Getting Started with UCSD Pascal
CMT \$95.00

HiSoft BASIC Extension
CMT \$54.95

HiSoft BASIC
Professional Editor/compiler, selective runtime routines, symbolic debugger. Allow compatible C or assembler code incorporated as functions/subroutines.
CMT \$179.00

Lattice C V5.2 Dev. System
Includes Lattice C compiler, source level debugger, compiler companion utilities, code profiler, global optimizer, 304 C function library, assembler/disassembler.
CMT \$399.00

Lattice Compiler Companion
Ten utilities designed to enhance the productivity of Amiga programmers. Extract file names from directories, build command files, generate cross referencing of C source files and more. Use with any programming lang.
CMT \$119.00



Lattice DBC II Library
CMT \$259.00

Lattice MS-DOS to Amiga Compiler
\$1,229.00
CMT \$0.00

Lattice Panel
CMT \$329.00

Macro 68 Assembler
Fast and powerful, offers support for entire Motorola M680X0 family, also for Copper. Many new directories. User-accessible file to customise directive names. Use of shared library allows resident pre-assembled include files.
DIG \$CALL

Modula 2 (Benchmark)
Integrated compiler, linker and EMACS editor. Compiles at 10,000 lines per minute with burst speeds of up to 30,000 lines/minute. Support AmigaDOS, Intuition, Excel and Modula 2. 700 pages of documentation.
CMT \$279.00

Modula 2 C Language Library
Add-on library product for Benchmark Modula 2. C language library functions for use in Modula 2.
CMT \$139.00

Modula 2 Debugger
An interactive, mouse driven source level debugger. Includes other advanced programming tools.
CMT \$219.00

Modula 2 IFF/Image Res. Library
Add-on library product for Modula 2 Benchmark. Access images at run-time as resources from Modula 2.
CMT \$139.00

Modula 2 Simplified Library
Simplify creation of Intuition screens, windows, gadgets and menus. Includes functions for double-buffered animation, bobs, sprites, speech, console and device.
CMT \$139.00

True BASIC
Transportable BASIC language code compatible with MS-DOS, Apple, Mac, CP/M and others. Includes Runtime.
CMT \$149.00



W'Shell Beachcombers for AREXX
Replacement command shell with command aliases, resident commands and piping, CLI compatible.
CMT \$74.95

Multimedia

Amiga-Vision
Create interactive presentations for education and training. Also ideal for video titling. Various transitions between screens. Anim OPT 5 support. Dbase compatible database.
CMT \$199.00

CanDo
Full multimedia authoring package able to generate stand alone applications. Strong support for gadget and file based operations. Handles brush anims, sound effects and text.
CMT \$199.00

CanDo Pro-PAK
Add on for CanDo
CMT \$64.95

Music

Amiga Midi Interface
Connect MIDI devices. Suits A500/2000
HPD \$49.95

Audio Engineer
Digital sampling system, two oscilloscopes display, stereo, sampling rates as high as 56,000 Khz with 68020 processor. Print waveform option. Real time echo and various sample processing capabilities. Software only
PP \$170.00

Audio Engineer Plus
Digital sampling system, two oscilloscopes display, stereo, sampling rates as high as 56,000 Khz with 68020 processor. Print waveform option. Real time echo and various sample processing capabilities. Inc. Hware
PP \$399.00

Bars and Pipes
Powerful MIDI music sequencer with module based expansion. Also handled inbuilt Amiga synthesizer. Ideal for professional use. New version expected in '91.
CMT \$399.00

COMIDI Mini
Advanced MIDI interface.
MAT \$179.95

Deluxe Music Construction Set
Includes MIDI, cut and paste, on screen keyboard and print-out options. 15 IFF sampled sounds.
ECP \$99.00

Dr. T's Copyist Professional
Sheet music from KCS, Pro 24, Texture and Amiga SMUS, Limited to 50 pages and prints on HP laserjet
CMT \$359.00

Dr. T's Copyist Apprentice
Print music and scores on a dot matrix or laser printer.
CMT \$149.00

Dr. T's Copyist DTP
Full postscript laser printer output of music scores.
CMT \$449.00

Dr. T's ESQuapade
Graphic editor/librarian for the ESQ-1 and the SQ-80.
CMT \$169.00

Dr. T's KCS Level II
Does everything of the basic program plus 16 more screens of algorithmic and global editing.
CMT \$399.00

Dr. T's Keyboard Control Sequencer 3
Three modes of operation - track, open and song. Edit options include merge, echo, solo and mute. Controlled through screen-displayed tape recorder.
CMT \$299.00

Software & Hardware Guide

Dr. T's Tiger Cub

A 12 track sequencer with real-time graphic editing and standard musical notation which can be printed out too. Optional MIDI output. For the beginner or semi-professional.
CMT \$119.00



Dr. T's Music Mouse

Musical composition using the mouse. Internal sounds or MIDI data are created according to mouse movements. Ideal for beginners or for the experienced to improvise and explore.
CMT \$99.00

Dr. T's Midi Recording Studio

Mouse activated. Use keyboard as well as true external MIDI devices as a musical keyboard. Mute and unmute tracks, cut, copy, paste or transpose, no print out. Eight tracks.
CMT \$69.95

Future Sound A500

Records two tracks simultaneously, samples up to 42,000 samples per sec., 20,000 per channel in stereo, full support for hard disks RAM disks & VDO devices.
CMT \$229.00

Future Sound Digitiser

Digitises sounds. The sounds can be altered, reversed, clipped etc.
CMT \$249.00

Instant Music

Uses colour and visual forms to define sounds. Music composition for non-musicians.
ECP \$45.95

Kawai Funlab Music System

Keyboard - 61 note, built in stereo speakers, 100 different sounds, 100 rhythms. Software - 5 track sequencer (allowing overdubbing and

multitrack recording) with music notation display, lyric display etc. Compact MIDI interface.
KAW \$CALL

M

Real-time interactive composition.
CMT \$279.00

Maestro

Allows you to electronically compose and edit scores. Australian developed program.
DFL \$199.95

M.A.S.T. MIDI Interface

powered from Amiga, plugs into serial port, one MIDI in, two MIDI outs, compatible with all software
MAS \$CALL

M.A.S.T. MIDI / SMPTE Interface

Powered from Amiga, uses serial port, one MIDI in port, four MIDI out ports, SMPTE input and output audio sockets, serial pass thru port. Converts SMPTE timecode from (professional) tape recorders and video to MIDI time code. Sync's in forward and reverse from .25 tape speed to x2 tape speed.
MAS \$CALL

Midi Magic

Midi sequencer, help text, multi-tasking, 16 tracks, 26 sequences, quantizing, multi channel recording.
DFL \$249.95

Music Data Rock & Roll

ECP \$45.95

Music Disk Hot/Cool Jazz

ECP \$45.95

Music X

Sequencer, keymap and patch editor, MIDI, master clock accurate to one millisecond, edit while recording.
CMT \$299.00

Music X 2.0

CMT \$0.00

Music X Junior

Contains sequencer, bar editor, filter page and can use Amiga samples.
CMT \$199.00

Pocket AMI

Midi interface.
MAT \$99.95

Sonix

Digital synthesizer supports eight MIDI voices, up to 32 channels, and IFF format, create, modify, edit. Save to disk or dump to printer as sheet music.
CMT \$99.00

Sonix Plus 2

Comprises Sonix and Soundtrax Volumes 1 and 2.
CMT \$125.00

Sonix Soundtrax Vol. 2

Each volume contains two disks of songs crated with sampled instruments. Interacts with Sonix.
CMT \$24.95

Sonix Soundtrax Vol. 1

Each volume contains two disks of songs crated with sampled instruments. Interacts with Sonix.
CMT \$24.95

Sound Sampler

New stereo sampler suit A500
HPD \$0.00

TFMX

Music sampler/compiler.
CMT \$99.00

Productivity

Bumper Sticker Maker

Complete with self-adhesive vinyl blanks to produce your own bumper stickers.
PAC \$29.95

Business Card Maker

Ideal for small business or individuals, this program allows you to incorporate graphics onto the included business card blanks.
PAC \$69.95

PageRender 3D

3D static image rendering and 3D animation. Also compatible with PageFlipper Plus F/X, AREXX support.
CMT \$199.00

Project Master

Professional project management. Graphic flow of

activities, Critical paths, actual vs planned. Expense graphs, Gantt and PERT charts, resource loads.
DFL \$289.95

CalcKey

Calculator, includes binary, octal, decimal or hexadecimal modes. Boolean functions AND, OR, XOR, NOT. Can send result into active window of an application. Australian made.
DTU \$CALL

Contact

Personal contacts manager. Dials phone via modem, prints labels, Arexx port. Australian.
DTU \$CALL

TAB Betting

ECP \$31.95

Thinker

Menu idea processor. Hypertext and Outline processing combined. Link to applications, pictures and text.
CMT \$85.00

Your Family Tree Ver 2.0

Keep track of complex family links. Supports as many as 16 million individuals, 8 marriages per individual, and 40 children per family. Powerful search function that allows creation of custom records. Req. 1mb Ram
CMT \$119.00

Spreadsheet

Advantage

Easy to use, simple spreadsheet program. Good graphics capabilities, however a little buggy and lacking a few of the basics such as relative cell cut and paste. (Also available as CALC in Gold Disk Office)
DFL \$275.00

Analyse!

Full colour graphs, IFF files, intuition interface, multiple windows, definable column widths. Now bundled with The Works!. Includes Flipside.
CMT \$89.95

DGCalc

Menu/command driven, individually adjustable

Software & Hardware Guide

columns, integrates with other programs, windowing, 52 user de-fined variables, 9 programmable function keys.
PAC \$89.95

Flipside

Prints spreadsheets of unlimited size. Sideways print utility.

CMT \$39.95

Halcalc

Compatible with all Amigas, multi-tasking/multi-window Fully supports intuition, uses memory only when a cell contains data, cut/copy/paste, pie, bar, line and more

CMT \$79.95

MaxiPlan 500

Spreadsheet, graphics and database providing 512 column by 16,384 row processing area and what-if analysis with numerical data.

CMT \$79.95

MaxiPlan Plus

Includes a macro feature and additional utilities as well as features of MaxiPlan 500.

CMT \$229.00

Superplan

Full featured spreadsheet environment, print wall planning charts/Gantt charts, graphics facility, Lotus 1-2-3/dBase compatible. Stand alone or with Superbase AREXX support allows data exchange with other programs

CMT \$129.00

Tutorial

20/20 Vision

AmigaVision disk tutorial. Covers all aspects. Step by step introduction through to professional level.

CCS \$CALL

Intellitype

Typing tutor

ECP \$45.95

MasterType

Typing tutor

MSP \$59.95

New and Improved

MasterType

Typing tutor

MSP \$59.95

Utility

Action Replay Amiga

Famous utility cartridge on the C64 now breaks through to the Amiga. Powerful machine code monitor, assembler and disassembler, picture grabber and modifier and program saver.

PAC / HPT \$CALL

Amiga 3D Graphic Programming/BASIC Disk

PAC \$19.95

Amiga Adv System Programmers Guide Disk

PAC \$19.95

Amiga BASIC Inside & Out Disk

For use with book by the same name.

PAC \$19.95

Amiga C for Advanced Programmers Disk

For use with book by the same name.

PAC \$19.95

Amiga C for Beginners Disk

For use with book by the same name.

PAC \$19.95

Amiga Disk Drives Inside & Out Disk

For use with book by the same name.

PAC \$19.95

Amiga External Drive Switch

An easy way to switch your external drive in and out, for games which will not operate with an external drive attached. Switching out your external drive reclaims another 30k of memory.

PAC \$39.95

Amiga Graphics Inside & Out Disk

For use with book by the same name.

PAC \$19.95

Amiga More Tricks & Tips Disk

For use with book by the same name.

PAC \$19.95

Amiga System Programmers Guide Disk

For use with book by the same name.

PAC \$19.95

Amiga Tricks & Tips Disk

For use with book by the same name.

PAC \$19.95

Amiga Virus Toolbox

A disk full of utilities to inoculate and immunise your software. Also a manual on how viruses work and how to prevent their spread.

PAC \$89.95

AmigaBASIC Inside & Out Disk

For use with the book by the same name.

PAC \$19.95

AmigaDOS Inside & Out Disk

For use with book by the same name.

PAC \$19.95

ARP 1.3

AmigaDOS Replacement Project version 1.1. Includes all documentation. Assembly language rewrites of all C DIR commands. Faster C commands with standard MS-DOS type *.* wildcards.

PRI \$5.95

B.A.D. Disk Optimiser

Decreases access time up to 500%. Supports multiple partitions, has an incredible workbench performance and works with fast filing system.

CMT \$74.95

CrossDOS

MS-Dos filing system. Read, write, format and copy MS-Dos or Atari disks with standard Amiga drives. Transparently access MS-Dos files from any application.

DTU \$CALL

Custom Screens

Creates basic code from screen drawings, Edit, draw and paint screens, convert IFF to basic code. Paint utility for programming.

CMT \$129.00

D.U.D.E.

Gadget driven replacement for the CLI. Twelve directory windows can be viewed at once. Full hard disk backup program. Ideal for drive housekeeping.

CMT \$74.95

Disk Mechanic

Includes a disk optimizer, hard disk back-up program, file recovery program, disk editor, and a dozen CLI utilities.

CMT \$129.00

Diskmaster

Excellent utility for file manipulation. Sits on own screen, two DIRs displayed, COPY, RENAME files. Format or DISKCOPY. View images, play samples. Easy to use. Full PAL support.

CMT \$59.95

Doctor AMI

Allows testing of disk drive and RAM for errors. Can correct some problems and switch out faulty memory using a separate utility. Works with hard drives.

CMT \$59.95

DOS 2 DOS

File transfer. Transfers all file types from PC/MS-DOS to AmigaDOS and vice versa. Handles 3 1/2 and 5 1/4 " formats.

CMT \$69.95

Dunlap Utilities

Forty Workbench utility programs. Fix hard drive error recover deleted files, keyboard macros, file house-keeping utilities.

CMT \$99.00

Facell

Floppy disk accelerator. Disk caching for up to four drives.

DTU \$CALL

Genius GM-7E Mouse

One of the world's largest manufacturers of mice, Genius, has developed this attractively styled, solidly built and economical mouse.

PAC \$49.95

KCS Power Board

Make your Amiga 500 IBM XT compatible, plus up to 1mb memory and also comes complete with MS DOS 4.01/ GW BASIC and DOS shell.

HPD \$0.00

Mac 2 DOS

Includes interface. Requires external Mac drive. Enables you to read and write Mac format disks to and from 400K and 800k. Converts MacPaint files to and from IFF and Mac ASCII files to and from Amiga ASCII.
CMT \$189.00

Mastering CLI

Disk tutorial, includes WB 1.3
CMT \$59.95

Powercopy

Backup Utility. Automatic Sync word scanning. Auto parameter file generation. Editing parameter files. Writes memory to disk. Reads track into memory.
HPD \$20

Project-D

Copy to all four disk drives at once, list of errors, includes three other utilities - Omnicopy (MS-DOS), Editor tool, Catalogue Tool (automatic disk catalogue)
CMT \$74.95

Quarterback

HD Utility. A fast backup-20MB in 30 minutes or less. Select by file restoration.
CMT \$84.95

Quarterback Tools

Maximizes the speed and reliability of hard disks and floppy disks by repositioning files to optimum locations on the disk which eliminates file fragmentation and consolidates disk free space.
CMT \$99.00

Quickmerge

CMT \$119.00

Raw Copy V1.3e

Back up utility, standard and parameter copier.
CMT \$84.95

Starsoft Hard Drive Backup

Take all the pain out of backup and restore operations Utilises advanced data compression methods for economy but not at the sake of reliability.
PAC \$69.95

Stuff It

Create your own pull-down menus, each capable of sending a user defined series of keystrokes to other

programs.

CMT \$59.95

Superback

Hard drive backup utility. Selectively copy any or all of the files and directories from hard disk, RAM or network device to floppy. Back up 20mb in 20 minutes. Restore data selectively by file/directory or device.
DFL \$99.95

Synco Express

High speed disk duplication system that will produce copies of your disk in around 30 seconds.
HPD \$0.00

Text-Ed Plus (U.S. Version)

Includes FastFonts, FunKeys, ARP., AREXX and BlitzDisk
CMT \$119.00

The Big One

A Lotto Systems generator and manager. Allows for storage and retrieval of systems data and analysis of Lotto systems.
PAC \$19.95

TR Text-Ed

Programmers editor.
CMT \$29.95

Transcript

Simply helps you write. Provides a wide array of text-editing and manipulating features. Includes 90,000 word spelling checker. Creates indexes/mail merges.
DFL \$89.95

Ultra DOS Module 1

CMT \$69.95

Virus Killer

CMT \$24.95

Workbench 1.3

New Shell, many extras.
CBM \$30.00

X-Copy Plus

Hardware
CMT \$129.00

Word Processing

Baby

100,000 Word Spell-checker, Spell check documents from

wordprocessor with no spell checker support.

CMT \$49.95

Beckertext

Numerous styles & fonts, auto wordwrap, auto page numbering, auto hyphenation, auto table of contents and index generation. On-line spell checker. WYSIWYG
PAC \$149.00

Cygnus Ed Professional

Fast and powerful text editor. For writer or programmer. Macro facility. Arexx port. File recovery.
DTU \$135

Excellence! 2.0

WYSIWYG word processor with style analysis, spell checker, grammar checker, Thesaurus, contents generator, index generator, multiple fonts, columns, colours and postscript support.
CMT \$299.00

Fleet Check

Spell checker.
CMT \$44.95

Kindwords 2.0

WYSIWYG wordprocessor that can print both graphics and text, 90,000 word spelling checker, selection of font sizes.
DFL \$99.95

Pen Pal (PAL)

Word processor, database, forms generator. Supports 4096 colours output and IFF pictures. Includes a 100,000 word spelling dictionary, search/replace and more.
DFL \$299.95

Promise

Includes a 95,000 word dictionary, spell checking rate of 18 words per second and a Spell Help which operates with any word processor.
DFL \$49.95

Protext Amiga

Includes background printing and 45,000 word spelling checker and mail merge. Version 4.1 is much improved. Text based - a fast, solid editor.
PAC \$199.00

ProWrite French Dictionary

CMT \$49.95

ProWrite German Dictionary

CMT \$49.95

ProWrite Proscript

CMT \$59.95

ProWrite V3.0

Generate proposals with charts, 95,000 word spelling checker, mailmerge, fast graphics printing. WYSIWYG
CMT \$199.00

Scribble Platinum

WYSIWYG.IFF graphic support. 104,000+ word spelling checker, 470,000 thesaurus with definitions, multiple windows, cut and paste, mail merge.
CMT \$89.95

Scribble!

WYSIWYG wordprocessor that contains a 40,000 word spelling checker. Now bundled with The Works!
OZI \$132.95

TextCraft Plus

Quick Reminder on-screen help, 29 tutorials, on-screen reference to keyboard shortcuts, mouse control, clear and concise instructions, six possible text styles.
CBM \$99.00

Textpro

Edit C source, define up to 30 function keys. Fast printer output using own printer drivers, merge IFF graphics, grab screens with BT SNAP utility
PAC \$99.00

WordPerfect Library

Helps organise appointments, notes, files and programs. Includes Calendar, Notebook, Calculator, File Manager, Program Editor.
CMT \$149.00

WordPerfect V4.1 English

Very full-featured program with drivers for almost any printer made. Ported from IBM and Amiga-ised. Speller and thesaurus included.
SWA \$0.00

Fish Disks 200-400

A FISH disk is a fast, inexpensive way to collect interesting and useful software for your Amiga. The Fish disk collection has been built up by a man called Fred Fish, who lives in Canada. Fred releases new additions to the collection every month. He collects

anyway What is a FISH DISK

the programs from programmers, users and Bulletin Board Systems.

Each program included is freely distributable. This means there may be no copyright, or a copyright under which you only pay a fee for the program if you like it (shareware). Often the authors solicit funds regardless of the category. A small amount can help ensure the next version of the program reaches

you quickly direct from the author along with relevant documentation.

Fred Fish has included all sorts of programs. The earlier disks require the use of the CLI for access. However, many of the more recent disks can be fully operated from the Workbench.

On each Fish disk you'll find there is little spare disk space, and all the documentation is included by means of text files you can type or click on an icon to

read.

Remember, we offer no guarantee that the public domain programs you buy will be bomb proof, or bug free. But some are very reliable, and those that aren't are normally updated, rewritten or pushed aside for a new better program.

Public Domain software is exciting to collect. There are lots of graphics and music, utility, business and games programs. Unlike commercial programs, they're cheap and you can have a lot of fun just exploring what they do and how they work.

An updated database of the complete Fish disk collection is available. This allows you to easily search for the program you want by name, category or a key word in the description. Use the order form on the last page to obtain a copy. □

FISH DISKS 200 - 400

DISK 200

NotBoingAgain Badge Demo entry. Interlaced HAM animation with nicely integrated sound effects. Great visual pun on original Boing demo. Binary only, needs 1Mb. **Tank** Badge Demo entry. Animation of a "Disktank simulator", with sound effects and a cute twist. Binary only.

DISK 201

Draco Update to Chris Gray's Draco. Enhancements include support for floating point, register variables, more optimization, improved call/return standard, etc. V.1.2, update to version on disk 76. Requires documentation from disk 77 to complete. Binary only. **DropCloth** Lets you place pattern, 2 bitplane IFF image or combination of pattern and image, into Workbench backdrop. V.2.4, update to V.2.2 on disk 128. Shareware, binary only.

DISK 202

SlavieFont Whole bunch of new fonts. V.1.0. **Vit** Both a VT100 emulator and a Tektronix (4014 plus subset of 4105) emulator, currently in use at SLAC. Requires ARP, and has an ARexx port. XMODEM 1K/CRC and Kermit protocol support also. V.3.656, binary only.

DISK 203

Examples Assembly and C code examples, including old favorites (like speechtoy and yacht3c) downloaded to assembly language. Replacement for official audio device, example of creating subtask, rewrite in assembly of R. J. Mica's file requester, etc. **GurusGuide** Sourcefiles for all examples published in the "Guru's Guide, Meditation #1: Interrupts" by Carl Sassenrath, the architect of the Amiga's low-level multitasking operating system and designer of Exec. **Team** Library of routines to access relational data base systems using the Index Sequential Access Method (ISAM). Beta version 0.9, binary only.

DISK 204

FileReq Simple file requester, written as an exercise to see how easy it would be (it wasn't). Includes source. **GnuGrep** Grep program from GNU project. Replaces grep/grep, egrep, and bmgrep. Does not expand Amiga style wildcards, so to scan multiple files you will need to use it with a shell that does this. V.1.3, includes source. **HAMCu** Installs a custom copper list for the current active view (usually workbench) that contains all the colours from 0x000 to 0xffff. Includes source. **Image-Ed** Shareware icon editor. V.1.8, binary only. **JPClock** Short clock program just packed with features. Includes source. **MouseBounce** Short hack/game that makes mouse pointer bounce around the screen. Object is to dose MouseBounce window and exit game. Each time you click mouse button, pointer speeds up. Includes source. **PopDir** Small utility which "pops open" took at contents of particular directory on demand. V.1.4, ind source. **PopInfo** Small utility "pops open" to give information about status of devices and memory. V.2.9, ind source. **Teacher** Short, simple hack. Includes source.

DISK 205

Bally Amiga port of former arcade game Click. Now has

sound effects. V.11, update to version on disk 181. Binary only, shareware. **BattleForce** Nice shareware game simulates combat between giant, robot-like machines. Binary only, V.3.01. **Chees** Port of a chess game posted to Usenet. Upgraded to use intuition interface. V.2.0, binary only.

DISK 206

All material is from 1988 Badge Killer Demo Contest. **Brownian** Demo based on both fractal theory and brownian motion. Includes source. **Hawk** Stereo image of a hawk. Requires red/green stereo glasses to view. **MemFlick** Treats all memory like it was part of bitplane inside graphics display. Provides sort of graphical picture of your memory usage. Binary only. **PeX** Demo of various graphics capabilities of Amiga. **PictureGarden** Demo, apparently in compiled basic. **StereoDemo** Demo of stereoscopic graphics, in assembly language. Requires red/green stereo glasses to view. Includes source. **Triple** Three demos of some of the Amiga's graphics and sound capabilities. Binary only.

DISK 207

Coyote Entry to 1988 Badge Killer Demo contest. Very cute (and large) animation. Requires about 1900 blocks of disk space, so it is distributed in "arcformat".

DISK 208

AsteroidField Entry for 1988 Badge Killer Demo Contest. Large animation of spacecraft flying madly through asteroid field (chased by unseen foes).

DISK 209

Bowl 1988 Badge Demo entry. Sculpt-Animate animation that shows three colored balls flying in circles above a mirrored bowl. Rendering took about 2 weeks. In zoomformat because of size (zoo program included). **Dps** To work with PrinScript program, commercial PostScript interpreter, to provide page previewer. V.1.1, includes source.

DISK 210

Calc Very nicely done scientific/programmer/plotter calculator. Scientific portion has most of the operations found on the more popular handhelds. Programmer portion has all special hex/binary/decimal conversions as well as register operations like ASL, ROL, LSL, AND, OR, XOR, etc. Plotter portion will plot equations. Also 26 memories, full mouse or keyboard operation, pull-down menus, and iconization. V.3.0, binary only. **LabelPrint** Easily print labels for your disks. V.1.9, shareware, binary only (source available from author). **NuHand** Animation of hand with fingernails scraping on a desktop. Badge Demo entry. Binary only.

DISK 211

AmigaWave 1988 Badge Demo entry. Animation with sound effects. **Esperanto** Keymap modification to use1 which, in conjunction with supplied slate,font, will allow one to type in Esperanto and Welsh. **Image-Ed** Shareware icon editor. V.1.9, binary only.

Fixes a serious bug in 1.8 version on disk 204.

SignFont Keymap and font that will allow user to type in American Sign Language, if one knows the font. **VirusControl** Virus detection and control program that checks disks during insertion, protects from link viruses, shows bootblock on screen, periodically checks system vectors, controls access to files with requester, etc. V.1.3, includes full assembly language source code.

DISK 212

Alice This animation is 1988 Badge Killer Demo entry. **DiskSalv** Disk recovery program for all Amiga file system devices that use either Amiga Standard File System or Amiga Fast File System. Creates new filesystem structure on another device, with as much data salvaged from the original device as possible. Update to version on disk 177. Binary only. **DogsWorld** This animation is 1988 Badge Killer entry.

DISK 213

Cucug Animation of the Champaign-Urbana Commodore Users Group logo, 1988 Badge Killer Demo entry. **Icons** Almost 300 icons in 8 (1) colors. Uses special program to get 8 color workbench to display these icons, made with DPaintII and IconGen. Most are miniatures of main screen of corresponding programs, or picture, made with "iconize" and "recolor" from disk 85.

DISK 214

ArcPrep Prepares files and/or directories for archival with arc or any other program that can't scan through different directories and/or handle long filenames. V.2.1, includes source.

MandelVroom Mandelbrot/Julia-curve generating program that features five numerical generators (integer, ffp, ieee, 020, and 020/881) in hand-crafted assembly for maximum speed, online mouse selectable help for all functions, generation of multiple pictures simultaneously, sophisticated user interface with shaded gadgets, etc. Zoom, magnify, color-cycling, contouring, auto-contouring, histogram, statistics, presets, extra-halfbrite support, overscan, orbits, pan mode, and more. Requires 1Mb or more. Source to V.2.0, update to version on disk 78. Compiled binary, along with help files and example images, can be found on disk 215.

MemDiag Memory diagnostic program to identify addresses which produce memory errors, and memory quarantine program which removes such defective addresses from system's free memory list, until hardware errors can be corrected. V.1.1, includes source. **RunBack** Another step in evolution of RunBackGround, from disks 73 and 152. Allows you to start a new CLI program and run it in the background, then closes the new CLI. This version has been enhanced to use NULL: device (included), which is a "real" device, so it solves problems with previous versions of RunBack which used Nil: "fake" device, causing crashes. Inc source. **SmartIcon** Shareware - an intuition objects iconifier. V.1.0 is limited to iconifying windows, still very handy. Adds new "iconify gadget" to each window, that when clicked on, iconifies window into an icon in ram: disk. Same version as on disk 134, now inc source code.

DISK 215

MandelVroom Mandelbrot/Julia-curve generating program that features five numerical generators (integer,

ffp, ieee, 020, and 020/881) in hand-crafted assembly for maximum speed, online mouse selectable help for all functions, generation of multiple pictures simultaneously, a sophisticated user interface with shaded gadgets, etc. Also zoom, magnify, color-cycling, contouring, auto-contouring, histogram, statistics, presets, extra-halfbrite support, overscan, orbits, pan mode, and more. Requires 1Mb or more. V.2.0, update to version on disk 78. Source is available on disk 214.

DISK 216

BackDrop Defines pattern which will then be displayed on workbench screen in normally empty area behind all windows. Similar in concept to DropCloth, but does not require workbench to be loaded (and does not cohabit very well with workbench). Includes source. **C64Emul** April Fools spoof that turns Amiga into C64, or at least makes it look that way. Includes source.

Cloud Generates and displays fractal surfaces that look remarkably like clouds. Based on ideas from book "Fractals" by Jens Feder. Binary only. **PrintSpool** DOS handler, print program, and control program that implement print spooling system. Control program handles administrative functions. Binary only. **VirusX** V.3.20 of popular virus detector/vaccination program. Features a test for 8 new viruses since the V3.10 on disk 175. Includes source.

Wanderer Neat little game with graphics and sound, ported from Unix version, originally written on Sun workstation. Idea from games such as Boulderdash, Xor, etc. Includes built-in editor for extending game by adding additional screens. V.2.2, includes source.

DISK 217

AntiCBS Animation in protest of CBS's coverage of Hacker's Conference in Oct 88. **Echo** Small replacement for AmigaDOS echo that will do some special functions, such as clear screen, delete to bottom of screen, scroll screen, place cursor at particular location, set text style and/or color. Inc. source. **InstallBeep** Replaces DisplayBeep function so that an IFF 8SVX sound is played instead of screen flashing. Sample sound files. V.1.1, binary only. **SnipIt** Input handler wedge to clip text from any window and paste anywhere using mouse. V.1.2, includes source. **SonixPeek** Utility to list all instruments used by one or more Aegis Sonix score files. Scan individual files, or search directories, checking all score files. Inc source. **Stevie** Public domain clone of UNIX 'vi' editor. Supports window-sizing, arrow keys, and help key. V.3.6, includes source. Update to version 3.35a on disk 197.

DISK 218

EdLib Library of additional functions for Manx. V.1.1, update to V.1.0 from disk 183. Includes source. **Mandel** Mandelbrot generator program. V.1.3, update to version on disk 111. New features and improvements include ARexx interface, coordinates in sight, more state info saved with a picture, batch files, programmable functions, more plotting options. Includes source. **Maze** Lets you build mazes and then solve them. Mazes can be trivial one level to very difficult three level. V.1.2, includes source. **PcPatch** Patches for PCCopy and PCFormat from EX-TRAS disk, to allow reading, writing, and formatting of

any kind of MS-Dos style disks, including 720K 3.5" diskettes. Binary only. Update to version on disk 163.

Scanner Makes commented C code of all intuition structures in memory. Structures will receive correct pointers towards each other. When finished, writes all structures to standard output. V.1.0, includes source.

Worm Amiga implementation of classic "worms" program. May specify size and length of worms, and number of worms. Includes source.

DISK 219
DeepSky Database containing information on 10,368 non-stellar objects, 600 color contrasting easily resolved double stars, 70 stars for setting circles, and misc white dwarfs, red stars, binaries, etc. Distributed in zoo format, about 1.2 Mb after extraction. V.5.0.

Mv Unix style mv/cp/rm program that moves, copies, or removes files. Includes interactive mode, recursive mode, and force quiet mode. Copies file permissions, dates, and comments, supports arp style wildcards, supports moves, etc. V.1.1, includes source.

DISK 220
DNet Link protocol that provides unlimited number of reliable connections between processes on two machines, where each end of the link can be either Amiga or Unix (BSD4.3) machine. Works on Amiga with any EXEC device that looks like serial device. On UNIX with tty and socket devices. V.2.0, update to V.1.20 on disk 145. Incl sources for Amiga and Unix versions.

DISK 221
AltocMaster For controlling amount of both Chip and Fast memory available to rest of system. Very useful for testing applications in low-memory situations. Snapshot to report differences in memory. V.1.17, binary only.

ANSIED Demo version of ANSI screen file editor. Easily create and modify screen of ANSI-style text graphics. Standard ANSI color set and text styles provided. Save features disabled. V.1.2.0ad, binary only.

Ballyll Amiga port of former arcade game Click. This version adds "cheat" mode and fixes minor bugs. V.1.1, update to version on disk 205. Binary only, shareware.

DFrame Utility to create animated bobs. Installs itself in DPaint II, after which you can draw each bob in DPaint II within its own frame. V.1.02, binary only.

IFFM2 Demo version of IFF support module for Interface Technologies M2Amiga Modula-2 system. Includes version of ViewILBM (with source) that uses IFF support routines. V.1.0.0D, binary only.

Steinschlag Tetris like game. V.1.5, binary only.

DISK 222
MemGauge Tool to display current memory usage, much like usage bar Workbench displays in root directories. V.1.4, includes source.

Mischief In tradition of "display hacks". Uses input device to do various acts of mischief. Incl source.

Plotlib Library of C functions useful for scientific plotting. Lattice C compatible. Contour plotting, three dimensional plotting, axis redefinition, log-log plotting and multiple subpages. V.1.00, incl source.

DISK 223
Csh V.3.03a of a csh like shell. Update to version on disk 199. New filter commands, new dir option, new editing options, sourcing of standard startup file, bug fixes. Includes source.

FixDisk Recover as much as possible from a defective disk. Can sometimes recover damaged (unreadable) tracks, check file integrity, check directory structure, undelete files, etc. Full intuition interface. V.1.0, binary only.

GravSim Animate up to 6 planetary masses, all of which exert gravitational force on each other. Masses can be placed anywhere on screen, and mass and initial velocity can be set by user. Program then steps animation through time, plotting and displaying new position in trajectory of each mass. V.1.50, includes source.

IFF2Sun Small utility. Takes Amiga IFF file and converts it to Sun rasterfile format. Update to version on disk 174, with better parsing, support for HAM mode, some bug fixes. Source only.

IFFtoSUN Takes a standard IFF format image and translates it into a SUN rasterfile format, like the IFF2Sun program also on this disk. However, this one runs on the Amiga. V.1.31, includes source.

Paccer Pacman clone with sound and game screen editor. V.1.0, shareware, binary only.

PopInfo Small utility which "pops open" to give information about the status of devices and memory. V.3.0, update to version on disk 204. Includes source.

SetCPU To detect and modify various parameters related to 32 bit CPUs. Commands to enable or disable text/data caches, switch on or off '030 burst cache line fill request, use MMU to run ROM image from 32-bit memory etc. V.1.5, update to V.1.4 on disk 187. Incl. source.

DISK 224
CLImax Creates borderless backdrop CLI window on custom screen. Also MoveSys, which reassigns SYS, C, S, L, DEVs, LIBs, and FONTS: to new volume with one simple "pure" command. Includes source.

KickMem For A1000 Amazing Computing 512K upgrade. Will patch 1.2 or 1.3 kickstart disk to perform addmem during kickstart. This allows warm boot survival of ram disk devices and eliminates addmem commands from startup sequence. V.2.0, inc source.

MoreIsBetter Two hacks make MORE more useful. V.1 is small "pure" CLI command that acts as front end for More, causing it to create its own window. Make V and More both resident! Fenestrate surgically alters CON: window spec inside More.

PetersQuest Follow a trail of hearts through a world of 20 levels, with porcupines and other hazards, to rescue Daphne. V.1.0, binary only.

Who Rewrite of "who", from disk 79, which gives substantially more elaborate information about tasks currently running (or waiting). Includes source.

Xebec Couple of hacks for Xebec hard disks. One makes it more possible to Mount Xebec hard disk with Fast File System, other is compact head parking program. Includes source.

DISK 225
AmigaTCP KA9Q Internet Software Package. Supports IP, ICMP, TCP, UDP, and ARP as basic services, and implements FTP, Telnet, and SMTP protocols as applications. Runs on IBM PC and clones, Macintosh, and Amiga. Includes source.

MyMenu Add your own menus to WorkBench menu strip, to run commonly used commands. Will execute both CLI and WorkBench programs, and is configured with a normal text file. Includes source.

DISK 226
Vit Both VT100 emulator and Tektronix (4014 plus subset of 4105) emulator, currently in use at SLAC. VT100 part originally based on Dave Wecker et al.'s VT100, many enhancements made. Requires ARP, and has ARexx port. XMODEM 1K/CRC and Kermit protocol support also included. V.4.036, with many enhancements over previous version, 3.656, on disk 202. New features include support for other serial ports, external file transfer protocols, and "chat" mode. Improved behavior on Workbench. Tektronix emulation now allows saving IFF files, PostScript files, printing bitmaps to printer. Other enhancements and bug fixes. Binary only.

DISK 227
MidLib Disk based library that permits sharing of serial port by MIDI applications through MIDI message routing and processing system. Midi utilities include midi monitor to display incoming midi messages to console, routing utility, midi library status utility, and more. V.2.0, update to version on disk 101. Significant speed enhancements, new utilities to play with MIDI files, and updated utilities, documentation and examples. Binary only (source for examples and bindings).

PickPacket Gives visual display of DosPacket structures sent to handlers, and lets you see results. You can perform handler operations such as open files, read or write data, examine or ExNext looks, etc, all by talking directly to file system handler. V.1.0, incl source.

RexxArpLib Library originally supposed to be ARexx interface to ARP library. Has also become interface to various intuition functions, containing over 50 functions including file requester, string/boolean requester, environment variable functions, simple message window, etc. V.2.3, update to V.2.0 on disk 178. Binary only.

RexxMathLib Library which makes various high level math functions such as sin, tangent, log, etc, available in ARexx. Version 1.2 and 1.3, binary only.

DISK 228
Az Nice little text editor, fast, simple to use, and very Amigaized. V.1.40, binary only.

Glib Text screen oriented librarian and editor for synths. Supports TX81Z, DX100, DEPS, DW8000, and K-5. Includes source.

JazzBench Drop-in multitasking replacement for WorkBench. More features than WorkBench and fully multitasking. Extend it, etc. Alpha version 0.8, binary only.

Xoper Very comprehensive program to monitor and control system activity. Monitor cpu, memory usage, ports, interrupts, devices. Close windows, screens, show loaded fonts or last Guru code number. Clean up memory, flush unused libraries, devices, fonts, etc. Spawns own process. Very handy background task. V.1.3, update to V.1.2 on disk 171. Assembly source included.

DISK 229
AlarmingClock Simple alarm clock program with a very alarming "ring". Includes source.

DrawMap For drawing representations of the Earth's surface. Can generate flat maps, mercator maps, globe view, or orbital view. Includes source.

Emporos You are living on the island of Emporos, where several countries exist. Your goal is to make one of these countries your own. There is only one way to do this, and you have to find it out. Binary only.

esuolM Little screen hack that causes mouse pointer to move in opposite direction of mouse. Includes source.

LeftyMouse Swaps functions of left and right mouse buttons so Lefties can use mouse. Includes source.

Shuffle Basic screen shuffler. Re-defines key combination Left-Amiga-M to push FRONT screen to back, instead of Workbench screen to back. Incl source.

Sim Simulator for register-transfer nets, which are used to describe hardware systems. Also provides a compiler

to define new devices. V.4.0, binary only.

DISK 230
AskTask Examine various bits of task structures of all tasks in system, from lists attached to ExecBase. Displays priority, state, flags, stack, signals, etc. Also remove tasks, change priority of a task, or send arbitrary signals to a task. V.2.4/89, includes source.

Fedup Random access, byte oriented file-editor that gives option of viewing and editing any file (binary or ASCII) using either ASCII or hexadecimal notation. V.2.1, binary only.

FileIt Simple database program in DRACO. Meant to be portable, does not use intuition. V.1.0, incl source.

NComm Communications program based on Comm V.1.34, with lots of very nice enhancements. Includes several auxiliary programs. V.1.8, binary only.

PrivHndlr Privilege violation handler for 68010 cpu. Like Deedle, but survives a reboot so you can use it with copy protected programs that run from boot. V.3, includes source in assembly code.

Quattro Another Tetris like program. Three levels of play difficulty, sound effects, 43-color background, next stone preview. V.1.0, binary only, source from author.

DISK 231
Diff Yet another diff program. Produces output a little more user friendly than the standard Unix style diff programs. Includes source.

File Recognizes various types of files and prints what that type is. Recognizes font files, icon files, executable files, standard object files, compressed files, command scripts, C source, directories, IFF files, LaTeX source, module II source, etc. V.1.0, includes source.

NoClick2 Silences clicking of empty drives on B5000 under AmigaDOS 1.3. Should also work on A500. Binary only, source available from author.

Plot Package for making 2D and 3D plots conveniently. Intuition interface program (Plot) and MultiPlot and ThreeDPlot. V.1.2, includes source to Plot.

Sed GNU sed (stream editor) program, ported to Amiga. Copies named files, or standard input, to its standard output, while editing. V.1.02, includes source.

DISK 232
Ballyll Port of former arcade game Click. Fixes some minor bugs and is faster than previous versions. V.1.11, update to version on disk 221. Binary only, shareware.

Dbug Machine independent macro based C debugging package. Provides function trace, selective printing of internal state information, and more. Update to version on disk 102, now includes machine independent stack use accounting mechanism. Includes source.

ReSourceDemo Demo version of ReSource, interactive disassembler. "Save" features disabled. V.3.06, update to V.0.36 from disk 192. Binary only.

DISK 233
Brik General purpose program that calculates both text and binary cyclic redundancy codes (CRCs). Text mode CRCs calculated by brik are portable across systems for files that are in usual text format on each system. Binary mode CRCs are portable for files moved from system to system without any change. Runs under MS-DOS, UNIX system V, BSD UNIX, VAX/VMS, AmigaDOS. V.2.0, includes source.

CacheCard Accessory to SetCPU for use with A2620 cards or 68030 systems. Modifies MMU table set up by SetCPU to selectively control caching for each expansion card. V.1.00, includes source.

CrcLata Complete CRC check files for disks 001-231 using the brik program also on this disk. Made directly from Fred Fish's master disks.

DISK 234
KwikBackup Harddisk backup program that writes data track by track onto multiple floppy disks. Uses archive bit, saves and restores comments and protection flags. V.1.0, includes source in Modula-II.

MuchMore Like "more", "less", "pg", etc. Uses its own screen to show text using slow scroll. Includes built-in help, commands to search for text, and commands to print text. Works with PAL or NTSC, normal or overscan modes. V.1.8, source in Modula-II and assembly code.

NetWork In long tradition of "screen hacks". V.1.0, includes source in Modula-II.

PrintIt Print IFF pictures on Epson compatible 9-pin printers. Many resolutions, many ways to convert color pics to black/white. V.1.0, includes source in Modula-II.

WBPIc Replaces Workbench's color 0 with IFF hires non-interlaced picture, in 2 or 4 colors. V.1.0, includes source in Modula-II.

Xhair Replaces mouse pointer with screen wide cross-hair, useful for positioning things vertically or horizontally. V.1.0, includes source in Modula-II.

DISK 235
CalcKey Basic four function, memory resident, pop-up calculator which uses only about 24K of memory and can automatically type answer to any calculation into program you were using. V.1.0, binary only, shareware.

CT Display images from a CT scanner, with several interesting sample images of real people. Display software is quite powerful, including functions like convolu-

tions, averaging, laplacians, unsharp masking, edge detection, gradients. V.2.2, update to version on 137. Binary only. Additional image disks from author.

MirrorWars New game featuring sound, title music, and two player mode. You fight your opponent via laser rays, but beware of mirrors reflecting shots. Binary only.

DISK 236
AmigaBench Optimized assembly versions of the Dhrystone benchmark. Includes 68000 and 68020 versions.

DiskHandler Sample implementation of file system that reads and writes 1.2 format diskettes. Includes source.

Heart3D Find left ventricle outlines in output of Imatron CT scanner, and display wireframe animations of beating heart. Several sample CT scan outputs. Binary only.

La V.3.1 of popular UNIX style directory lister. Update to V.2.0 from disk 178, includes bug fixes, support for multiple wildcard pathnames, quicker sorting, a best-fit output, new output width/height options. Incl. source.

Proc Example of how to create full-fledged DOS process without needing to call LoadSeg first. Incl. source.

Xpr2modem Amiga shared library which provides ZModem file transfer capability to any XPR-compatible communications program. V.1.0, includes source.

DISK 237
CLIPrint Example of printing to the CLI from assembly code. Includes source.

CType Text file reader, small, reasonably fast, includes bi-directional scrolling, search, go to given percentage, printing capabilities. V.1.0, incl source in assembly.

DPlot Simple display program for experimental data, supports paging through lots of data and provides scaling and presentation. V.1.0, source from author.

ILBMlib Shared library (libm.library) to read/write IFF files, derived from EA IFF code, with enhancements. Examples of using library from C code, assembly code, or BASIC, with source for examples and interface code.

ParOut Shows how to allocate and communicate directly with parallel port hardware from an assembly language program. Includes source.

Speed Performance benchmark useful for comparing processing speeds. Performs 10000 iterations of some selected groups of 68000 instructions while using the DateStamp time function to record how many ticks it takes to complete. Then compared against two known prestored times. V.1.0, includes source in assembly language.

CWDemo Demo version of pop-up utility to control color register assignments of intuition custom screens. V.3.1, binary only.

DMouse Versatile screen & mouse blanker, auto window activator, mouse accelerator, popl, pop window to front, push window to back, etc, widget. Includes DLN-Art, screen blanker replacement program. V.1.20, update to V.1.10 on disk 168/169. Includes source.

LabelPrint Easily print labels for your disks. V.2.5, update to V.1.9 from disk 210. Shareware, binary only (source available from author).

NGC Virus check program. Checks bootblock on all inserted floppy disks and reports nonstandard ones. Checks jump tables of all resident libraries and devices and reports suspicious entries. V.1, source in assembly.

Pyth Draw Tree of Pythagoras. V.1.1, includes source.

Steinschlag Tetris like game. V.1.8, update to V.1.5 from disk 221. Binary only.

DISK 238
Contains Forth programs from JGoodies #1 disk, from Delta Research (the makers of JForth Professional 2.0).

Bruneje Various tools. StringPkg is string package for both Forth style and NUL terminated strings.

DateTime are handy tools for getting and printing formatted date and time. Utis are utilities used by other files. CursorControl is example of moving text cursor. Includes source code.

Evolution Graphically simulates evolution of species of "bugs", the insect kind. Bugs, represented by moving blobs, eat bacteria represented by single pixels. They mutate, compete for food, reproduce and pass mutations to their offspring. Standalone image, source code.

FFT Highly optimized Fast Fourier Transform tools for digital signal processing. Can be used to compute the frequency spectrum of a complex signal. Useful in variety of different applications. Floating point and integer versions. Includes source (requires JForth).

Guru Handy "guru" number interpreter. Tells you what "81000009" means, for example. CLI usage only. Standalone image with readme file. Source code included.

H2J Converts 'C' style 'h' include files to JForth style 'j' files. Useful when developing interfaces to new libraries like ARP, etc. Standalone image and source code.

HAMmm2 Graphics hack that displays moving lines in HAM screen for hypnotic effect. Uses sound tools from HMSL for drone sound that corresponds to graphics image. Standalone image and source code.

HeadClean Combined with fibre cleaning disk, can be used to clean heads on disk drives. Source code examples of accessing Trackdisk device, and using gadgets. Standalone image with source code. Shareware. V.2.0.

JustBeeps Simple example of using Audio and Timer devices. Plays series of beeps based on just intoned tuning system. Standalone image with source code.

Mandelbrot Fast Mandelbrot rendering program that

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contains Forth programs from JGoodies #1 disk, from Delta Research (the makers of JForth Professional 2.0).

Bruneje Various tools. StringPkg is string package for both Forth style and NUL terminated strings.

DateTime are handy tools for getting and printing formatted date and time. Utis are utilities used by other files. CursorControl is example of moving text cursor. Includes source code.

Evolution Graphically simulates evolution of species of "bugs", the insect kind. Bugs, represented by moving blobs, eat bacteria represented by single pixels. They mutate, compete for food, reproduce and pass mutations to their offspring. Standalone image, source code.

FFT Highly optimized Fast Fourier Transform tools for digital signal processing. Can be used to compute the frequency spectrum of a complex signal. Useful in variety of different applications. Floating point and integer versions. Includes source (requires JForth).

Guru Handy "guru" number interpreter. Tells you what "81000009" means, for example. CLI usage only. Standalone image with readme file. Source code included.

H2J Converts 'C' style 'h' include files to JForth style 'j' files. Useful when developing interfaces to new libraries like ARP, etc. Standalone image and source code.

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Fish Disks 200-400

uses some of mathematical properties of Mandelbrot set to greatly reduce drawing time. Demonstrates graphics programming, assembly language, menus and IFF file I/O. Standalone image with source code.

NeuralNet Example of Neural Net programming converted to JForth. Demonstrates a programming technique that many say is wave of the future for software. Simple demo that shows neural propagation. Standalone image with source code.

Textra Easy-to-use text editor allows multiple windows, and provides simple mouse driven interface. Those familiar with Macintosh will be comfortable with Textra's Cut, Copy and Paste commands. Standalone image. Documentation included. No source code.

DISK 240

CrossDOS "Tryware" version of mountable MS-DOS file system for the Amiga. Software product that allows you to read and write MS-DOS/PC-DOS and Atari ST formatted disks (V. 2.0 or higher) directly from AmigaDOS. "Readonly" version, which does not allow any writes to disk. Fully functional version for very reasonable price from Consultron. V.3.02, binary only.

Dis AmigaDOS shareable library which implements symbolic single-instruction disassembler for MC68000 family and program which uses library to disassemble dump AmigaDOS object files, making full use of symbolic and relocation information. Inc source code in Draco. DM-Maps IFF maps to Dungeon Master. All 14 levels.

MemLib Link library of routines to aid in debugging memory problems. Works with Lattice C 5.0 and possibly with earlier versions. Includes trashing all allocated memory, trashing all freed memory, keeping track of freed memory with notification if it is written to, notification of memory freed twice or not at all, notification of overrunning or underrunning allocated memory, generation of low memory conditions for testing purposes, etc. Includes source.

RunBack V. 6, update to version on disk 152 (version on disk 214 appears to be on different evolutionary path). Compiles under Lattice with many optimizations enabled, can be made resident. Includes source.

XprLib External file transfer protocol library. Document and code example for implementing external file transfer protocols using Amiga shared libraries. Update to version included with the vlt program on disk 226.

DISK 241

ASDGrnd Extremely useful shareware recoverable ram disk. AmigaDOS device driver implements a completely DOS compatible disk device in memory that survives resets, guru's, and crashes. Absolute must for those with lots of ram. Update to version on disk 58. Now works with up to 8Mb of memory. Rewritten in assembly, now faster and much smaller. Binary only.

CBBS WORLI BBS system for use in amateur radio. Originally written for IBM-PC compatibles. V. 6.1c with source code.

Fix68010 Patches executables that fail to run on machines equipped with an M68010, so that they no longer use the prohibited privileged instructions.

Man Similar to the UNIX "man" program. Displays information about a topic from manual pages. Does not include any database of topics. V. 1.2, includes source.

NoClick Silences clicking of empty drives on B2000 under AmigaDOS 1.3. Should work on A500. V. 3.4, update to version on disk 231. Incl assembly source code.

Tiles Basic tile game like Shanghai or GunShy. A board is covered with a set of 144 tiles, 36 different sets of 4 identical tiles, each with a picture on it. Object is to remove the tiles, 2 at a time, by matching identical tiles. V. 2.1, includes source in Modula II.

DISK 242

BootBlocks Detailed documentation on what a bootblock is and how it works, along with sample bootblocks and a program to install a custom bootblock. Includes source for sample bootblocks and install program.

Check4Mem Checks for specified amount of memory, with certain attributes, from batch file. If requirements are not met, WARN returncode is generated. V. 2, includes source.

CustReq Glorified ASK command for startup-sequence. Generates requester with specified title, text, positive and negative gadgets (either of which can be default), and optional timeout value. V. 2, includes source.

FileReq Second version of file requester, much more powerful than one on disk 204. Shareware, incl source.

FullView Text viewer that uses gadgets at bottom of screen (thus can display text 80 columns wide), opens up to full height of workbench screen, has fast scrolling, can work with compressed files (compression program included). Shareware, binary only, source from author.

Image-Ed Icon editor to draw and edit images up to 150 by 90, in 16 colors. Freehand drawing, empty or filled rectangles, ellipses, and triangles, lines curves, and polygons, copy, flip about x or y axis, stretching and condensing, food fill and complement, text with selection and loading of font style, undo, etc. V. 2.2, update to V 1.9 on disk 211. Binary only, source from author.

JAR Shareware game (Jump And Run) using 3-D graphics. Collect blue pills lying on floors and steps, don't fall down or off steps, avoid several monsters wandering about. V.1.0, binary only, source from author.

JPClock Short clock program just packed with features. V. 1.2, update to version on disk 204. Includes source.

PPrefs To replace standard preferences, shorter, more efficient, easier to use. Binary only.

PaletteReq Easy way to set the palette of any screen from your program. Includes source.

PopInfo Small utility which "pops open" to give information about the status of devices and memory. V. 3.1, update to V.3.0 on disk 223. Includes source.

ZeroVirus Fully integrated virus checker and killer, with bootblock save and restore features. Finds both bootblock and file based viruses. V.1.3, binary only.

DISK 243

FragIt Dynamic memory thrasher. Randomly allocates and deallocates pseudo-random size values of memory, ranging from 16 bytes to 50000 bytes by default. This puts stress on the memory allocation routines of an application undergoing testing by simulating a very busy, highly fragmented memory environment. V. 2.0, featuring many bug fixes, a full intuition interface, configuration settings via the icon, etc. Includes source.

ImageLab Performs image processing on IFF pictures. Includes standard image processing functions such as convolution, averaging, smoothing, enhancement, histograms, FFT's, etc. Also file conversion functions, a clipboard, and other useful functions. V. 2.2, binary only.

LPE LaTeX Picture Editor is a graphical editor for producing "pictures" for LaTeX system, which may be imported by LaTeX. Draw boxes, dashed boxes, lines, vectors, circles, boxes with centered text, and plain text. V.1.0, binary only.

NoClick Silences clicking of empty drives on B2000 under AmigaDOS 1.3. Should also work on A500. V. 3.5, update to V.3.4 on disk 241. Incl assembly source code.

Password Enhances your computer's security by making it complicated enough that users without password will get discouraged trying to boot and use your system. Should keep out most users. V. 1.21p, binary only.

Procy Intuition based disk copier similar to the resident "DiskCopy". V. 2.0, a highly upgraded rewrite of version on disk 151. High speed diskcopy with write-verify and data recovery from damaged tracks. Friendly in its usage, as well in its multitasking properties. Binary only.

SimGen Will add 2 or 4 color picture to WorkBench screen. If picture is digitized, it will look much like a genlock, hence the name SimGen. Binary only.

SuperLines New lines demo with real-time control panel to change various aspects of action. 10 builtin color palettes, support for things like color "smudge", color cycling, color "bounce", multiple resolutions, and can display either lines or boxes. V. 1.0, binary only.

WarpUtil Warp (V.1.1), UnWarp (V.1.0), and WarpSplit (V.1.1). Warp reads raw filesystems and archives them into compressed version in normal file. UnWarp turns them back into filesystems. WarpSplit splits up into smaller pieces on track by track basis. Binary only.

DISK 244

BBChampion BootBlockChampion!!!, very nicely done program to load, save, and analyze any bootblock. V.3.1, binary only.

BootInfo Creates small intro on bootblock of any disk, which will appear after you insert disk for booting. Headline up to 44 characters. Scrolling text up to 300 characters. V.1.2, update to V1.0 on disk 188. Binary only.

FMC Alternative to NoFastMem program. Uses cute little switch gadget to turn fast memory on or off. V. 1.2, includes source in assembly code.

SizeChecker Shows a list of possible sizes of file to check for unexpected changes in size of those files. For example, can be used to spot link virus or to point out changes in configuration of system. V. 1.0, binary only.

TextDisplay Text display program, like "more" or "less", but about half the size and handles all screen formats (palmtsc, interlace/non-interlace, etc.). V. 1.52, update to version 1.1 on disk 188. Binary only.

XColor Designed to change colors of any screen. Also add and subtract bitplanes in screen, or convert screen to black and white (grayscale). Handles HAM and EHB screens. V. 1.2, includes source in assembly code.

DISK 245

ATOF Small utility that allows you to use fonts of another disk without using the CLI. Version 1.0, binary only.

BootInfo Creates a small intro on bootblock of any disk, which will appear after you insert disk for booting. This is "next generation" BootInfo, a more colorful version than one on disk 244, but text must be shorter. First line can be up to 24 characters. Second and third lines up to 22 characters. Scrolling text up to 98 characters. "Next generation version 1.1". Binary only.

Feenster Can operate on windows owned by another program, to close them, change their size, refresh gadgets, move window to background, etc. V1.0, inc source.

PathMaster File requester with lots of features. Easily configured to suit variety of applications. Incl source.

Reversi Plays the classical reversi game on an 8 x 8 square field. V. 1.2, includes source in assembly code.

Vlt Binary update to vlt program on disk 226, and fixes a problem with external protocol support. You still need the rest of the files from disk 226. V.4.065, binary only.

DISK 246

Dmake Release V 1.0 of Matt's version of the UNIX make utility. Update to beta version on disk 179. Multiple dependencies, wildcard support, etc. Binary only.

LabelPrint Easily print labels for your disks. V.2.5b, update to V.2.5 from disk 238. Shareware, binary only (source available from author).

NComm Terminal program based on comm version 1.34. Hot keys for most program functions (including dialing up to 10 phone numbers), PAL and NTSC support for normal or interlaced screens, screen I/O greater than 2400 baud, ANSI/VT100 terminal emulation with full 8 color text support, IBM graphics, optional translation styles, split screen mode, full user control of color palette, full support for all European languages, full serial port control, baud rates up to 19200, script language, phonebook, keyboard macros, etc. V1.8, binary only.

NoClick Program which silences clicking of empty drives on B2000 under AmigaDOS 1.3. Should also work on A500. V. 3.6, update to version to V.3.5 on disk 243. Includes assembly source code.

ScreenShare Library and support programs that enable applications to open up windows on other applications' custom screens. Both applications must cooperate for screen sharing to work. V.1.2, includes source for interface portions.

Ty Text Display program based on Amiga "less" V.1.0. Has both keyboard and mouse control of all functions, intuition interface, and uses Amiga specific keys (such as the Help key) correctly. V.1.3, includes source.

DISK 247

AnalogJoystick Software support for use of analog joysticks. Includes driver, header file for code that calls driver, example program that uses driver. Incl source.

AssemTools 140 macro routines which make assembly language programming a lot easier. Also library of routines containing buffered C-like file handling functions (open, close, lseek, fput, etc) and file name requester. All re-entrant. Includes source for example programs using macros and library, and 6502c cross macro assembler.

RemoteLogin Two programs for remote access. One program checks serial port for incoming call, and starts a program when it is detected. Other is password protection program which allows starting various programs based upon login id, thus providing some minimal security. Includes source.

XprLib External file transfer protocol library. Document and code example for implementing external file transfer protocols using shared libraries. V. 2.0, update to version on disk 240, many extensions and enhancements. Includes sample XPR library and source.

DISK 248

AmiGantt Project definition and management tool designed to create simple, interactive method of outlining task required to complete particular project, using GANTT chart as input format. AmiGantt displays project in multi-window mode with separate windows for GANTT chart, task information input, resource histogram display, and PERT chart display. Up to 500 tasks may be defined etc. V3.0.0, shareware, binary only.

CLI-Colors Simple program to change colors of border around CLI window. Includes source in assembly code.

Ripper Small, fast, Offhelo program. Does not use any look-ahead methods. Binary only.

Maze Example of fully re-entrant maze generation program written in assembly language using Manx's assembler. Includes source.

NetHandler Software Distillery's network file system handler (NETJ), using DNET to mount on Amiga's devices on another Amiga. Also serves as an example file system written entirely in Lattice C. V1.0, inc source.

Regex Amiga shared library version of GNU regular expression package from Free Software Foundation. A regular expression is a concise method of describing a pattern of characters in a string. By use of special wildcards, almost any pattern can be described. Can be used for searching strings in such programs as editors or other string handling programs. V1.0, incl source.

DISK 249

Automata Four cellular automata programs. Automata is a one dimensional cellular automaton. Crud is a automaton based on a sum index rule. Demon is a cyclic space automaton, and Life is one of the oldest and best known of all cellular automata. Incl source.

Slicer Slicer computes and displays images of the Mandelbrot and Julia sets. Unlike many Mandelbrot programs that generate pictures directly, Slicer computes and stores an array of raw data which it may then render into pictures in number of ways. V.1.0, binary only.

TurMile A two dimensional turing machine simulator. Imagine a small bug crawling around on your computer display moving one pixel at a time. At each step it uses its internal state number and the color of the pixel it's on as indexes into set of tables to decide what color to change pixel to, what direction to move, and what its new internal state should be. Includes source.

DISK 250

ASimplex Implementation of Simplex algorithm for solving linear programs. Uses standardized MPX-format for input data files. V1.5, update to V1.2 on disk 199.

Changes include bug fixes, ability to run from CLI, own window for I/O, some new commands. Includes source.

GravityWell Celestial motion simulator that simulates motion of up to twenty bodies in a Newtonian universe. The view of the simulation may be scaled, rotated in three dimensions or repositioned. Includes source.

Paranoids Asylum escape game. Traditional board game played by drawing cards, rolling dice, and moving pieces around board. Object is to get all of your patients out of the asylum. V.1.0, binary only.

RPSC Reverse polish scientific calculator. Programmable RPN calculator in Hewlett-Packard tradition. Supports operations with real numbers, complex numbers, matrices, and 3-D vectors, storage and recall of labeled variables. Data and programs may be saved, loaded, or written as ASCII text. V.1.1, binary only.

DISK 251

Debug Symbolic debugger. Features include symbolic disassembly, simple expression parsing, multiple breakpoints, memory fill, memory dump, single step in trace mode, skip over subroutines, etc. V.2.10, binary only.

DiskSalv Disk recovery program for all file system devices that use either Amiga Standard File System or Amiga Fast File System. Creates new file system structure on another device, with as much data salvaged from original device as possible. V1.42, update to version released on disk 212. Binary only.

DiskSpeed Disk speed testing program specifically designed to give most accurate results of true disk performance. Automatically updates and maintains ASCII database of results. V.1.0, incl source in C.

Linstrom Miscellaneous small programs. Includes basic games, programs based on algorithms (demon, turmites, mountain), fish tank simulator. Includes source.

Monopoly A simulation of board game MONOPOLY. Binary only, source available from author.

RouteRoad Trip planner that takes a list of cities and a list of known routes between cities, and generates distance and time required to reach your destination. V.1.0, includes source.

DISK 252

CrossDOS "Tryware" version of mountable MS-DOS file system for Amiga. Read and write MS-DOS/PC-DOS and Atari ST formatted disks (V.2.0 or higher) directly from AmigaDOS. "Read only" version, does not allow writes. Functional version from CONSULTRON. V.3.05b, update to V3.02 on disk 240. Binary only.

TrekTrivia Very nice mouse-driven trivia type program for StarTrek fans. 100 questions, additional trivia disks from author. V.2.0, update to version on disk 180, includes selectable skill levels, cheat mode, and 250K of digitized music. Binary only, shareware.

Zerg Ultima done that takes your character through simple but deadly fantasy world where you get to slaughter monsters, talk with inhabitants of fully populated towns, embark on royal quests, purchase a plethora of weapons, cast spells, etc. V.1.0, binary only.

DISK 253

DumpDiff Small utility that prints hexdumps of 2 files, with all differences between the two files highlighted. V1.0, includes source in Modula-II.

Elements Very nice interactive display of Periodic Table of Elements. Can display large amount of data about selected element along with lot of general info. V1.2a, update to version on disk 175. Loads faster, takes up less disk space, fixes minor bug, adds enhancements. Incl source in C.

KeyMac A keyboard macro processor that allows you to record keystrokes and then play them back. V.0.1, includes source in Modula-II.

MegaWB Makes your WorkBench screen as large as you like. V.1.2, includes source in Modula-II.

MuchMore Another like "more", "less", "pg", etc. Uses own screen to show text using slow scroll. Built-in help, commands to search for text, and commands to print text. Works with PAL or NTSC, in normal or overscan modes. Supports 4 color text in bold, italic, underlined, or inverse fonts. V.2.5, update to V1.8 from disk 234. Includes source in Modula-II and assembly code.

MultiSelect Small program to select several icons on the workbench without having to press the Shiftkey. V1.0, includes source in Modula-II.

PowerPacker Shareware command and data cruncher, with full intuition user interface. Executable files crunched are automatically decrunched upon execution, thus saving precious disk space. V.2.3b, binary only.

WBShadow Creates shadow for everything displayed on WorkBench (Windows, Icons, Gadgets, Menus, Texts, etc). V.1.0, includes source in Modula-II.

With CLI command that allows you to start any other CLI command several times and give it all files that match filepattern as an argument, one at a time. V.1.0, includes source in Modula-II.

DISK 254

Etalet Another "more" or "less" type file reader, which differs from others in that it supports superscripts and subscripts at very low memory cost, and supports a complete Greek alphabet. Includes source.

Macchi "Mouse accelerator" program that also includes hotkeys, features of sun mouse, clicktofont, popdi, title

bar clock with a bbs online charge accumulator, and more. V 2.6, update to V 2.4c on disk 163. Binary only. PatternLib Sharable library which implements AmigaDOS patternmatching, and program that compiles ".id" files into libraryheaders and interface stubs. Includes source in Draco.

SlotCars Fast action one or two player game of "duel" slotcars. Shoot rockets and avoid his. Binary only. Uedit V 2.5b of nice shareware editor. Learn mode, command language, menu customization, hyper text, other user configurability and customizability features. Binary only, shareware, replaces V2.4g on disk 189.

DISK 255

CyclicSpace A Griffeathian cyclic space generator program. Implements a cellular automaton. V 1.42, includes source in assembly code.

Makelcon Will make an icon (info file) using image data from either another icon, or IFF picture file. Image data is drawn on screen so you can see exactly what icon will look like. You can also make IFF files from icons, which can then be loaded into a standard IFF graphics editor. V 1.1, binary only, source from author.

MED Music editor like SoundTracker. Song consists of up to 50 blocks of music, which can be played in any order. Editing features include out/cut/copy tracks or blocks, changing vibrato, tempo, crescendo, and note volume. Includes switching low-pass-filter on or off on per song basis, etc. V1.12, binary only. Source for player program included.

RolandD110 To transfer sound samples between Amiga and a Roland D-110. V 1.0, binary only.

RolandS220 To transfer sound samples between Amiga and Roland S-220. V 2.0, update to MIDIsoft version 1.0 on disk 199. Several enhancements. Binary only.

SunMaze The 3d maze demo from disk 171, now expanded with shadows in the corridors to give more sense of direction. Includes source.

DISK 256

BlitDemons Implements the Demons cellular automaton. Using extremely simple rules it exhibits rather complex behaviour. Uses blitter to perform over 350,000 cell-generations per second. V1.0, includes source.

NameGame Game based on popular type of word skill puzzle contest sponsored by newspapers. Binary only.

Stewie Public domain done of UNIX "vi" editor. Supports window-sizing, arrow keys, and help key. V 3.7a, update to V3.6 on disk 217. Addition of ARP wildcard expansion for file names, support for "lcmd", other small enhancements, some bugfixes. Includes source.

DISK 257

ColorReg Colour palette library callable from any program. Used to adjust colors of any screen. Automatically adjusts to screen size, number of colors. Has many features including SPREAD, COPY, UNDO, RGB, HSV, as well as customizable gadgets. Binary only.

FileIO Update to file requester library on disk #203. New features, include files, docs, examples in C, assembly, and Basic. Binary only.

Vlt VLT is both a VT100 emulator and a Tektronix (4014 plus subset of 4105) emulator, currently in use at SLAC. Requires ARP, and has ARexx port. XMODEM 1K/CRC and Kermit protocol support also. Support for additional serial ports, external file transfer protocols, and "chat" mode. Tektronix emulation allows saving IFF files, PostScript files, and printing bitmaps to printer. V 4.226, update to V4.065 on disk 245 and V4.036 on disk 226. Comes in two versions, one with Tektronix emulation, and one without. Other changes include full XPR version 2.0 support, and a scrollbar/view/histroy buffer. Binary only.

DISK 258

Backup Backup and Restore allow you to backup any directory tree with optional compression, and later extract all or part of tree. Protection, date, and file comment are saved with each file. V 2.04, an update to V2.01 on disk 168. Binary only.

DMouse Versatile screen & mouse blanker, auto window activator, mouse accelerator, popcli, pop window to front, push window to back, etc, widget. Includes DLIneArt, a screen blanker replacement program for use with DMouse. V1.20, update to version on disk 238 (also called V1.20). Includes source.

STReplay Shared library allows loading and playing of SoundTracker modules, even from high level languages like Basic or C, without special effort. Includes source.

Suplib Support library needed to rebuild various programs from the source, including Dme, DMouse, etc. Update to version on disk 169. Includes source.

DISK 259

EFJ Fast action machine-code game (Escape From Jov) featuring hi-res scrolling, large playfield, disk based high score list, stereo sound, multiple levels, cheat mode, realistic inertia and gravitational effects, animated sprite, and more. V III, update to version on disk 148. Includes source in assembly code.

DISK 260

Accordian Demo version of solitaire type card game. Object is to condense all cards into one pile. Cards are

dealt face up from left to right, one at a time. Piles are built by moving a card or pile from left onto a card or pile to right. V 1.0.1, binary only.

Calculation Demo version of solitaire type card game. Object is to stack cards into four ordered stacks, one that counts by one, another that counts by two, another by three and another by four. V1.0.2, binary only.

CCLib Implementation of standard C library, that is done as an Amiga shared library, containing over 140 functions. V 1.3, binary only.

SeaHaven Demo version of solitaire type card game. Object is to separate the deck into its four suits, each in an ordered stack from ace to king. V 1.1, binary only.

DISK 261

CopDis A copper list disassembler that can be run from CLI or linked with and run directly from an application program. V0.0a, includes source.

ShowBiz A fun animation with mice, a dancing alligator, etc. Includes source in "director format".

XprZmodem Shared library, provides Zmodem file transfer capability to any XPR-compatible communications program. V2.0, update to V1.0 on disk 236. Adds support for XPR spec V 2.0 capabilities, including automatic download activation, better user interface for setting options, improved speed, etc. Includes source.

DISK 262

Indent V 1.1 of GNU Indent, C source code formatter/indenter. Especially useful for cleaning up inconsistently indented code. Includes source.

Jumble Quick "brute force" program for solving anagrams. Not very elegant, but gets job done. Incl source.

Lotto To replace user group's old shoebox full of membership numbers and names and add some pizzaz to drawing for door prizes at club meetings. Incl source.

QMouse Very small mouse accelerator (4K) assembly language, but with most features of larger cousins. Not related to QMouse on 49. V1.6, shareware, binary only.

QView Very small file view program (only 3K) in assembly language, but with most features of its larger cousins. V1.1, shareware, binary only.

WorldDataBank Project using geographical data, made available by CIA, to draw Mercator projection of any area of Earth in various degrees of magnification. Also includes a program that displays a "satellite view" of any region. V 2.0, includes source.

DISK 263

Sentinel Large ray-traced animation created with Turbo Silver SV, Deluxe Photolab, Deluxe Paint III, and Director. 60 to 70 frames of animation, rendered during about 3.5 weeks. First place in 1989 BADGE Killer Demo contest. Because of size, has been split across two disks. Rest of files are on disk 264. Requires 3Mb to run.

DISK 264

Sentinel Large ray-traced animation. Because of its size, it has been split across two disks. The rest of the files are on disk 263.

DISK 265

VAUX-Killer A very funny animation, won 2nd place in 1989 BADGE Killer Demo Contest. Because of size, demo is split across two disks. Other files are on disk 266. Two floppy drives, or hard disk, strongly recommended. Binary only.

DISK 266

VAUX-Killer A very funny animation. Because of its size, the demo is split across two disks. The other files are on disk 265. See disk 265 for details.

DISK 267

Diglib Amiga device independent graphics library for fortran applications. Enhanced and debugged version of public domain library, sponsored by US Government. This library is required for part of Matlab package, also included on this disk. Includes source in FORTRAN.

Mackie Versatile dimmacro-key initiator based on POP-CLI with a unique method of "screen-blanking". I won't say more, just try it! V 1.3, update to V1.2 from disk 189. Now includes automatic generation of different patterns and some bug fixes. Includes source.

Matlab FORTRAN package (MATrix LABoratory). Provides comprehensive vector and tensor operations in a package which may be programmed either through macro language or through execution of script files. Supported functions include sin, cos, tan, arc functions, upper triangular, lower triangular, determinants, matrix multiplication, identity, hilbert matrices, eigen values, eigen vectors, matrix roots, and more. Amiga specific features include workbench startup, polar plots, contour plots, enhanced plot buffer control, algorithmic plot display generation. Includes source in FORTRAN.

DISK 268

Doctor A Animation of Amiguy on basketball court, entry to 1989 BADGE Killer Demo Contest. Animation source (for Sculptor/Animate-4D) available from author.

Klide Line art demo, won 4th place in 1989 BADGE Killer Demo Contest. Uses line mode blitter code capable of rendering short vectors at a rate up to 15,000 lines/second. Binary only.

OnlyAmiga 9th place in 1989 BADGE Killer Demo Contest. Demonstrates sound, multitasking, HAM color, blitter, and more. Binary only.

DISK 269

Calendar Generates calendars in any one of 10 standard formats for any year after 1900. Binary only.

ChessTutor To introduce novice chess players to basics of game. Shareware, written in AmigaBASIC.

PropGadget Example code for using proportional gadgets, written in assembly code and C, that can be called from your own application. Includes source.

RadBoogie Won 7th place in 1989 BADGE Killer Demo Contest. Uses almost all features of Amiga extensively, including copper, blitter, sprite hardware, 68000 machine language, etc. Includes source.

ShowDisk Useful program that graphically shows map of sectors used on floppy drives by one or more files. Color coded so you can identify what sectors are used by various directories and files. Includes source in assembly language.

SpinPointer Short source module provides "busy" indicator replacement for mouse pointer. Includes source.

DISK 270

ColumnSet Text filter program that takes as input file with one word per line and produces file with these words laid out in same order in even columns, as many as will fit across output screen or page with at least one space between columns. Includes source in Modula-2.

MRBackup Hard disk backup utility that does file by file copy to standard AmigaDOS floppy disks. Includes intuition interface and file compression. V 3.3d, update to V2.4 on disk 170. Binary only.

TooMuch3D Won 10th place in 1989 BADGE Killer Demo Contest. It is a warning to those who spend too much time in front of computer monitors. Binary only.

DISK 271

CPUSluffoff Cute "computer wars" animation entry to 1989 Badge Killer Demo Contest. Lots of visual jokes. Binary only.

LaserBoing Ray-traced animation with sound entry to 1989 BADGE Killer Demo Contest. This "Amiga Boing" ball is just loaded with energy! Binary only.

DISK 272

AmigaPunt Designed to predict performance of horses in a race. Premise is that factors affecting horse's performance, and ultimately result of race, can be given a value. Binary only.

Balloon Animation with sound effects entry to the 1989 BADGE Killer Contest. Binary only.

Spigot Ray-traced animation, using overscan HAM and sound effects, won 6th place in 1989 BADGE Killer Demo Contest. Binary only.

DISK 273

BattleForce Nice shareware game simulates combat between two or more giant, robot-like machines. V 3.61, update to V3.01 on disk 205. Binary only.

PennyWise Easy to use, flexible cashbook program using Amiga intuition interface. Can be used to keep track of financial transactions of a cheque, bank, business, or similar account. Shareware, binary only.

DISK 274

HP11 Emulates HP11C calculator including program mode. Features ON/OFF button that turns calculator into icon that will sit and wait until you need it again. V1.1, update to version on disk 153, includes a few bug fixes and minor changes. Binary only.

KeyBiz Will make you think you have mice scurrying around in the back of your computer. Includes source.

LookFor General "find file" utility handy for hard drives, multiple drives, and multilayered paths. Incl source.

SlideMaster Slideshow program that can show any IFF ILBM picture, including HAM, extra half bright, hires, interlace, and overscan, using several different wipes. Has ARexx port and is fairly small. V 0.1, binary only.

Snap Tool for clipping text or graphics from screen, using clipboard device. Finds out character coordinates automatically, handles different fonts, keymaps, accented characters, and more. V1.3, includes source.

Xoper Very comprehensive program to monitor and control system activity. Monitor cpu, memory usage, ports, interrupts, devices. Close windows, screens, show loaded fonts or last Guru code number, etc. Spawns own process. Very handy background task. V 2.0, update to V1.3 on disk 228. Completely rewritten interface and iconify feature. Assembly source included.

DISK 275

Vt100 V 2.9 of original vt100 emulator with kermit and xmodem file transfer. Adds AREXXport, new script and AREXX commands, some bug fixes, ability to use custom external protocol modules (not XPR), and support for zmodem. Update to V2.8 on disk 138. Incl source.

DISK 276

Blit Entry to 1989 BADGE Killer Demo Contest. Uses Copper to show lower right corner of screen in Hi-Res, while leaving rest of the screen in Lo-Res. Binary only.

ClickDOS A "directory utility" type program which is

reasonably small, uses single window on Workbench screen (which can also be iconified), does not rely on other programs for most of its functions, very memory efficient. V 1.10, binary only.

DateRequester A module that provides intuition based support for soliciting a date value from user. Supports both point-and-click selection of date values and direct entry of individual components. Also includes standalone ARexx driven date requester program which can be called from ARexx macro files. Includes source.

DISK 277

ARTM (Amiga Real Time Monitor) displays and controls system activity such as tasks, windows, libraries, devices, resources, ports, residents, interrupts, and vectors. V 0.9, binary only.

Icon High-level programming language with extensive facilities for processing strings and lists. Has several novel features, including expressions that may produce sequences of results, goal-directed evaluation that automatically searches for successful result, and string scanning that allows operations on strings to be formulated at a high conceptual level. Resembles SNOBOL4 in emphasis on high-level string processing, ease of programming and short, concise programs. V 7.5, update to V6.0 from disk 81. Binary only.

LabelPrint Easily print labels for your disks. V3.0, update to V 2.5 from disk 238. Shareware, binary only (source from author).

LPE LaTeX Picture Editor is a graphical editor for producing "pictures" for LaTeX system. Draw boxes, dashed boxes, lines, vectors, circles, boxes with centered text, and plain text. V1.1, update to V1.0 on disk 243. New drawing tools, enhanced user interface features, optimized code, some bug fixes. Binary only.

WBAssign Small WorkBench program that creates AmigaDOS assignments without having to open a CLI. Assignments may be made by specifying a complete path (as supported by CLI command), or by specifying a path relative to current directory. Can create assigns specified in icon files of other programs located anywhere in system. V 1.20, binary only.

WBRes Allows WorkBench users to have resident programs, as in resident capability of WShell, ARP shell, and WB1.3 Shell. V1.2b, shareware, binary only.

DISK 278

AmigaTrek Three stories which are a parody of the Star Trek series, with an Amiga flavor.

ASpice Version of SPICE 2G.6 circuit analysis program modified for Amiga. Program arrays are adjusted to require one tenth the memory of the DEC VAX version. Some users who are used to full mainframe environment may have to be more aware of memory demands of their analysis. Require 1 MB. Neither supports nor requires 68020 processor or 68881 coprocessor. Amiga V5.1, update to V2.3 on disk 177. Binary only.

Frag Two CLI utilities that show disk file fragmentation on AmigaDOS floppies. Includes source.

DISK 279

Ash A sh-like shell. Command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. V1.0, binary only.

MouseClock Clock and free memory display utility that generates small playfield to mouse, using two hardware sprites as display area. V 1.2, includes source.

MRBackup Update to V3.3d on disk 270, to fix a serious bug. Binary only.

MRPrint A detabbing print utility that sends text files to either printer device or standard output. Besides expanding tabs, it will also generate page headers, line numbers, and new margins. V 3.4, includes source.

DISK 280

Berserker Virus detection program that can detect various forms of common bootblock and link type viruses. Rather than checking for specific virus, it looks for conditions that indicate a possible virus infection, thus can detect new strains. V3.0+, includes source in assembly.

CM Celestial mechanics simulator with intuition interface. Construct a layout of celestial bodies and specify various parameters for bodies and simulation. CM then animates bodies according to laws of gravitational attraction. Setups may be saved to disk. V1.0, incl source.

Graph Draws mathematical functions on plane. Text and axes may be added, and result saved to disk or printed. Full intuition interface with multiple windows (one per graph), requesters, etc. V 1.0, includes source.

DISK 281

Diff GNU diff and diff3 utilities, V1.10. Provides all features of BSD's diff plus options to diff non-ASCII files, to ignore changes that just insert or delete blank lines, to specify amount of context for context diffs, plus more. Part of RCS package on disk 282. Includes source.

DiffDir Compares contents of two directories, generat-

Fish Disks 200-400

ing a list of differences to standard output. Detects files or directories present in one hierarchy but not other, file attributes that are different (dates, flags, comments, etc.), and differences in file size. V 1.1, update to V1.0 on disk 188. Includes source.

FarPrint Debugging functions for programs which don't have any links to their environment. Consists of two major parts: a harbour process open to receive and distribute messages and requests, and a set of C functions to be linked into any program wishing to communicate with FarPrint main process. V1.3, includes source.

LoadImage IFF ILBM reader that accepts overscanned pictures, allows you to scroll around in bitmap if picture is larger than current display, works on both PAL and NTSC machines, supports color cycling using interrupt code, and printing image portions. V1.9, ind source.

MRARPP Extended ARP file support package that adds orthogonal set of routines which support generalized I/O with resource tracking while using ARP library. Includes source.

MRMAN Contains Amiga document reading system similar to the "man" command on UNIX systems. Offers high degree of flexibility in naming and placement of document files on your system. V1.0, includes source.

DISK 282
PrintHandler Custom PRT: driver offers easy single sheet support & limited data spooling. V1.1, ind source.

RCS Revision Control of System (RCS) manages multiple revisions of text files. Automates storing, retrieval, logging, identification, and merging of revisions. Useful for text that is revised frequently, for example programs, documentation, graphics, papers, form letters, etc. V1.2, includes source (source to GNU diff program used with this distribution of RCS on disk 281).

DISK 283
Briff Cross reference program for AmigaBASIC code. Generates list of BASIC code with lines sequentially numbered, plus table showing all variables and labels used in code, and line numbers where used. Created from CREP on disk 166. V1.01, includes source.

CWDemo Demo version of a pop-up utility to control color register assignments of Intuition custom screens. V3.2, update to V3.1 on disk 238. Binary only.

FullReset To get rid of all viruses, vector modifying programs & residents, by forcing specific reset. Binary only.

MarbleSlide Aim of game is to build a slide on a 10 x 11 board of pieces that move around, allowing marble to reach goal piece. Play against time. Also includes board editor for building custom boards. Binary only.

SensPro You try to remember and mimic sound/color sequence played by computer. Each time you get it right, another sound/color is added. Binary only.

WatchMan A little screen hack inspired by "EyeCon" on Sun systems. Includes source.

DISK 284
ARPTools Group of small utility programs requiring ARP, created to address some deficiencies of ARP CLI environment, especially to exploit potential offered by non-named pipes in ARP shell. V1.0, includes source.

Back Two programs to assist users of Backup/Restore program in making error-free VERIFIED backups onto floppy disks. Also useful as a trackdisk device example. Includes source.

Dme V 1.38. Simple WYSIWYG editor for programmers. Not a WYSIWYG word processor in traditional sense. Includes arbitrary key mapping, fast scrolling, bit-line statistics multiple windows, and ability to iconify windows. Update to V1.31 on disk 169, includes source.

FileTest This routine is used to recursively descend file system tree from specified directory location, reading files into memory (if they will fit) as it goes. Useful as complete test of file system integrity. Includes source.

IconTools Some tools for icon tricks. These tools are really hacks because they exploit some areas of info files that current version of WorkBench does not clear or reset upon loading the icon. Three programs which allow WorkBench drawer windows to appear in non-standard colors and let you move position of file name text to anywhere in icon's graphic. Released to public in hope that 1.4 will allow more flexible user customization of WorkBench appearance. Includes source.

RecurDir A recursive directory program useful as aid in ZOOing files in nested directories. Allows one to easily ZOO the complete contents of a disk. Includes source.

DISK 285
AvailMem Small free memory counter that continuously displays amount of free chip and fast memory in bytes (as opposed to K). V 1.03. Includes source.

DynaShow A program and example image using dynamic Hires technique to display up to 4096 colors in high res with overscan. Dynamic Hires uses a different 16 color palette on each scan line. V 1.1, binary only.

Liner Freely distributable outliner. Can be used to create outlines of any length, in a number of different formats, and can save the outlines as straight text for export to other programs. V1.32. Includes source.

MSizer Resize window from any corner when holding down left mouse button and left Amiga key. Incl source.

Plasma Plasma cloud generator program that uses extra halfbyte mode. Plasma clouds are a special form of

fractal which show very smooth color gradations. V 1.1, includes source.

Rubik Translation to C of Rubik's Cube solver program originally written in Basic. Includes versions to do "unwrapped" 2D solution, and more visual 3D solution. V 0.0, includes source.

DISK 286
CCutl Eight small CLI utilities that use cdlb library shared library. Includes program to display disk usage on menu bar, a program to check the integrity of IFF files, a program to remove shared libraries from memory if they are not being used, and more. Binary only.

EW Patch for Intuition OpenWindow() and CloseWindow(), creating Mac-style frame whenever window is opened or closed. Very short, ind source in assembler.

FastDisk Disk optimizer providing two ways of optimizing. V 1.1, now has Intuition interface, ARP support, bug hunting, Latice C compatibility. Includes source in C.

S220to8SVX Converts sound samples from a Roland S-220S-10MKS-100 to 8SVX IFF 8-bit samples. V 1.0, binary only.

TextExe Takes a text file, creating a runnable command which will output the text. Allows various operations to be done on text. Binary only.

Uedit V 2.5d of this nice shareware editor. Has learn mode, command language, menu customization, hyper text, and other user configure and customize features. Binary only, shareware, update to V2.5b on disk 254.

DISK 287
DAsm Multipass, symbolic, macro assembler for multiple target machines, including 6502, 68705, 6803, and 6811. Conditional assembly, addressing mode overrides, arbitrary number of named segments, pseudops for repeat loops, etc. V 2.12, includes source.

FullView A text viewer that uses gadgets at bottom of screen (thus can display text 80 columns wide), opens up to full height of Workbench screen, has fast scrolling, can work with compressed files (file compression program included). Shareware, binary only, source from author. V 1.1, update to version on disk 242.

JPDitUtil A directory-utilities type program with many built-in commands, and 16 customisable gadgets. User configurable in many ways. Can be iconified to Workbench screen. V1.11, binary only.

MouseCoords A small assembly utility which shows current position of the mouse pointer. Can be "jumped" to operate on any screen. Includes source in assembly.

OSK A software keyboard, which allows you to type using the mouse. Can be made to send keystrokes to any window, and can be iconified. Includes source.

PopDir Small utility which "pops open" to look at the contents of a particular directory on demand. V 1.6, update to version 1.4 on disk 204. Includes source.

Unshar Extracts files from Unix shar archives. Small and fast, handles extraction of subdirectories, recognises wide variety of "sed" and "cat" shar formats. V1.1, ind C source.

VirusX V 4.0 of popular virus detection/vaccination program. Update to V3.20 from disk 216. Includes check for new Xenos virus.

ZeroVirus Fully integrated virus checker and killer, with bootblock save and restore features. Finds both bootblock and file based viruses. Uses Brantlines to recognise viruses, and has "on-line" Brantline editing facilities. V 2.01, update to V1.3 on disk 242. Binary only.

DISK 288
DiskSpeed Disk speed testing program specifically designed to give most accurate results of true disk performance. Auto updates and maintains ASCII database of results. V 2.0, update to V1.0 on disk 251, with new features and cleaner user interface. Incl source in C.

PlotData2D Plots data onto custom user defined screen and window, reading plot and screen/window definitions, along with X and Y data pairs, from disk file. Supports linear, log-log, and semi-log axis plots. Data can be plotted with lines, symbols, or both. Includes numerous example plots. V 1.0, ind source in Fortran.

Script Script language that allows you to automate actions you would normally have to do manually. Can do anything that you do manually, by either mouse or keyboard, by using a set of commands that instruct Script to simulate specific mouse or keyboard actions. Also has ARexx port, so can be driven by ARexx allowing ARexx control over programs that do not have ARexx ports. Includes both recorder to generate scripts and player to execute them. V 1.20, binary only.

DISK 289
AmiGo Go board and player. Play against another human, against Amiga, or have Amiga play itself. V1.0, includes source.

Atree Disk utility which imitates similar utilities available on IBM compatibles (PC Tools, Xtree, QuickDos, etc). Intent is to allow user graphic representation of entire directory structure on a disk device, including files in each directory, and capability of moving quickly through tree to directory to access files. V1.7, binary only.

LHArc An archive program like Arc and Zoo, with a heavy emphasis maximum compression for minimum archive size, using LZHUF compression. Amiga version 1.0 (compatible with MSDOS version 1.13). Binary only.

Orbit Plots ground trace of satellites on map of earth, using orbital elements for 130 satellites, from list updated every two weeks on Compuserve. V 1.2, binary only.

TreeWalk A command for visiting all files of subtree of file system, testing every file in specified subtree against supplied "filter" expression, and if file passes through filter, to issue specified command with that file as one of the arguments. Reasonably fast, robust, does not use a lot of stack space. Includes source.

DISK 290
DPlot Simple display program for experimental data, with the goals of supporting paging through lots of data and providing comfortable scaling and presentation. V 2.0, update to version 1.0 on disk 237, incorporates several significant enhancements. Binary only.

IPC IPC (Inter-Process Communication) package, with the goal of creating a standard for IPC on the Amiga flexible enough to handle widest possible range of applications. Protocol used addresses different problem areas than ARexx, and emphasizes different aspects of communication process, such as fast communication and preservation of data structure. Ind source.

KillReq Small program which disables Intuition's Auto-Request function. Prevents AmigaDOS from putting up system requesters, useful if operating Amiga remotely and can't use the mouse to click CANCEL. Unlike similar utilities which affect only a single CLI, KillReq disables ALL requesters. V 1.0, includes C source.

Xicon Use icons to call up scripts containing CLI commands. V 2.5, update to V2.01 on disk 157. Includes automatic selection of correct execution directory, option to have keyboard interaction, and use of IF, ELS:, etc. DOS commands. Binary only.

DISK 291
GMC Console handler with command line editing and function key support. Provides extended command line editing, function key assignment in four levels, extended command line history, online help for functions in handler, and iconify function. V 4.0, binary only.

Keyboard Functions to translate RAWKEY Intuition messages into usable keycodes. Includes source.

Sim Simulator for register-transfer nets, used to describe hardware systems. Also provides a compiler to define new devices in addition to Sim's internal devices. V 4.2, update to V4.0 on disk 229. Binary only.

SKah A ksh-like shell. Command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, coexistence with scripts from other shells. Very well documented. V1.2, update to V1.0 on disk 279, where it was called ash. Binary only.

DISK 292
Devstat Assembly code example of locating and listing information about all mounted devices. Includes source.

FileRequest Assembly code example of file requester. V2.0, update to V1.0 on disk 173, where it was called FileSelect. Include 3 speed scrolling of filenames, and ghosting of unavailable devices. Includes source.

MultiPlot A package for making 2D plots conveniently. Nicer user interface, support for PLT: device, and support for file conversions. PLT: handler which emulates plotter by accepting HP-G commands, creating raster image, then dumping it to any preferences supported graphics printer. V XLN, includes source to MultiPlot. Update to V1.2 on disk 231, where it was called just "Plot". This version is 2D only.

DISK 293
ClockD Utility which combines clock, mouse accelerator, screen blanker, window manipulator, function keys, and macros into single program, in assembly language for maximum efficiency. ARexx port. V4.07, binary only.

CrcLists Complete CRC check files for disks 001-292 using brk program. Made directly from Fred Fish's master disks. Update to lists on disk 233.

DISK 294
Dnet A link protocol that provides unlimited number of reliable connections between processes on two machines, where each end of the link can be either Amiga or Unix (BSD4.3) machine. Works on Amiga with any EXEC device that looks like serial device. Works on UNIX with tty and socket devices. Better than 95% average throughput. V 2.10.13, update to V2.0 on disk 220. Includes sources for both Amiga and Unix versions.

FmsDisk File based trackdisk simulator, useful for creating floppy-like partition on hard disk (so you can diskcopy to floppy) without having to create a special partition for it. Also useful for testing new filesystems and such. Supports up to 32 units, with either old file system or new fast filesystem. Includes source.

DISK 295
GnuGrep The grep program from GNU project. Replaces cgrep, lgrep, egrep, and bmgrep. Currently does not expand Amiga style wildcards, so to scan multiple files you will need to use it with a shell that does this for you. V 1.5, update to V1.3 on disk 204. Includes source.

Lhwarp Will read tracks directly from floppy disk, compress them using adaptive Huffman encoding, and output them to file, which can be used by lhwarp to reconstruct image of original disk. V1.03, includes source.

MandelMountain Renders three-dimensional images of blowups of the Mandelbrot set. Includes several example images. V1.1, shareware, binary only.

DISK 296
Comal Demo of AmigaCOMAL (missing only SAVE), an incremental p-code compiler from Denmark. COMAL is a language with the design goal of combining the modern structured approach of Pascal with the ease of use and interactivity of BASIC. There are versions of COMAL for IBM, VAX, CPM, C-64, Amiga and various European operating systems. Includes a complete turtle graphics package. Perfect for education yet powerful enough for applications programming. V2.0, binary only.

Patch Port of very useful UNIX utility which applies context diffs to text files to automatically update them. Port of V2.0.1.6 (patch level 12), dubbed Amiga version 1.0. Update to version on disk 129. Includes source.

DISK 297
Clean A small program written in assembly code, to be used in conjunction with a cleaning disk, to clean your floppy drive heads. V 1.0, includes source.

DevKit A collection of C and ARexx language programs to facilitate software development process. Launch compiler from within editor, have cursor positioned on errors, look up autodoc page for any Amiga function at single keystroke, find system structure within include files, or find any function in code. V 1.2, ind source.

Elements Very nice interactive display of Periodic Table of Elements. Can display large amount of pertinent data about selected element along with lot of general info. V 1.3, update to V1.2a on disk 253. Adds a non-interface mode and extend selection of two elements. Binary only, shareware.

Hypno A "bounding polygons" type program like Mackie, LineArt, and Bezier. Includes source in C.

Jed Nicely done, intuition-based editor, quite user-friendly. Word-wrap, auto-indent, newid, alt buffer, split-window, keyboard macro, help, printing, etc. V 1.1, update to V 1.0 on disk 180. Shareware, binary only.

SuperMenu Information display system to quickly and easily display text files (and sections of text files) with the press of a button. V 1.62, shareware, binary only.

WriteIcon Sample code that creates an icon using a compiled-in image, the source of which can be created with Icon2C on disk 56. V 1.0, includes source in C.

DISK 298
BBChampion BootBlockChampionIII, very nicely done program to load, save, and analyze any bootblock. V 3.21, update to V 3.1 on disk 244. Checks for five different LAMER viruses and some other enhancements. Binary only.

CDClock "Dumb Clock" utility that displays date and time in Workbench screen title bar. Uses only about 2 percent of CPU time and about 10Kb of memory. Also has alarm clock feature and audible beep for programs that call DisplayBeep. V 1.5, includes source.

Fenster Can operate on windows owned by another program, to close them, change their size, refresh gadgets, move window to background, etc. V 2.0, update to V 1.0 on disk 245. Includes source.

FileMaster A file editor like NewZap or FedUp, to manipulate bytes of a file. You may also change the file size or execute a patch. V 1.11, includes source.

DISK 299
Hangman A simple hangman program. Currently runs only from CLI. Includes source in C.

Rzil ARexx interface library that makes it easy for programs to implement a complete, robust ARexx interface with minimal effort. V 1.0, includes source.

SceneGen Demo of program called Scene Generator, that generates very realistic looking landscapes. Enhanced, low cost commercial version, of Scenery program on disk 155. V 2.03, binary only.

Yacc Port of Berkeley Yacc. Has been made as compatible as possible with AT&T Yacc, and is completely public domain. Note that it is NOT the so-called Decus Yacc, which is/was simply a repackaging of proprietary AT&T Yacc. Amiga version 1.0a, includes source.

DISK 300
SuperEcho Neat program to be used with Perfect Sound-like audio digitizers that generates LIVE audio effects, including Echoes, Deep Voice, Squeaky Voice, Many People, M-M-Max Headroom etc. Binary only.

TACL Adventure player for games written with Adventure Construction Language, a commercial computer language. Two sample games; one is text-only and the other is text-graphic. Binary only, plus the TACL source code used to write the graphic adventure.

TitleGen Simple script language program for generating vertically crawling title sequences in any font. Good for video production. V 1.6, binary only.

XenoZap Recursively descends into directories, disabling Xenos virus in all executable files that it finds. V 1.0, includes source in Modula-2.

DISK 301

Aquarium For searching through special database containing information about contents of library, to find programs that match specified list of conditions. Includes database of disks 1-300, and program to add contents of future disks to database. Binary only.

IFFLib Off-to-use library to perform various manipulations on IFF files. Sample IFF viewer and utility to save from screen as an IFF file. V 16.1, update to V 15.3 on disk 173. Couple of bug fixes and some new features. Binary only.

UeditUpdate Partial update to 2.5d version of Uedit on disk 286. Includes only UES executable, which has had patches d1 through d4 applied. Disk 286 is still needed for a complete Uedit shareware distribution. Binary only.

DISK 302

Chop Uses hotkey to chop displayed screen down to temporary maximum of 4 planes in lo-res or 2 planes in hi-res, allowing processor full access to chip memory. Only displayed screen is affected. Unchopping screen puts everything back normal. V 1.0, binary only.

DisTalk Cute little program, like "munchos" on disk 137, which plays digitized sound samples when you insert or remove a floppy disk. Samples saved as IFF sound files. V 1.0, binary only.

MiscUtils Some small sound and screen hacks. Includes source in C.

PPMore "More" like utility. Reads text files crunched with PowerPacker, thus saving space at the slight expense of time to uncrunch the text. V 1.3, binary only.

ProgUtils Some miscellaneous programming utilities and examples. Includes source in assembly code.

QuickHelp Utility that helps make and display own help files for commands. Disk space usage minimized by using PowerPacker to crunch help files. V 1.2, binary only.

RollOn "Soko-Ban" like shareware game. Includes English and German versions, a level editor, and digitized sounds. V 1.1, binary only.

Selector Helps you assemble programs on a boot disk and start them in a user friendly way. V 2.5, binary only.

TurboMandel Fast mandelbrot program, written in mix of C and assembly language. Select between using floating point or integer calculation. Full intuition interface, cycling capabilities, extensive color control, user definable iteration depth, fully implemented zoom, 3-D display mode, support for extra halftone & interlace and hires, more. V 1.0, inc source in assembly and C.

DISK 303

CPM To compute mandelbrot via Continuous Potential Method. Used to make 3-dimensional pictures of mandelbrot set. Batch mode type program so several images can be generated, one after the other, without any human interaction. Includes source.

DEM To compute mandelbrot via Distance Estimator Method. It is used to make high resolution black-and-white images. Batch mode type program so several images can be generated, one after the other, without any human interaction. Includes source.

Demon Implements the Demons cellular automaton. Using extremely simple rules it exhibits rather complex behaviour. Includes source.

FixIcons Scans through all files in given volume or directory, looking for project icons and changing their default tools according to instructions given in script file. V 1.2, inc source.

IceFrac Fractal generator using Diffusion Limited Aggregation algorithm. V 2.1, inc source.

Rocket Another screen hack. Zeroes in on your mouse pointer. Binary only.

ScreenZap Utility that forcibly removes screens and windows from your system. Useful to get rid of zombie screens or windows left around by aborted or buggy programs. V 2.3, includes source.

SnowFall Another screen hack. Watch the snow fall, get blown around by the wind, and collect in realistic heaps. Includes source.

DISK 304

Circles A circles pattern generator, reminiscent of one of the early Amiga demos. V 1.1, includes source in C.

DocSplit Splits 1.3 autodoc files into individual subroutine files. One file is created for each subroutine, with name created by appending ".doc" to subroutine name. V 1.0, inc source.

Gears Calculates and displays gears of a multispeed bicycle. Works for bicycles with 3 to 21 gear combinations. V 1.1, includes source.

IRA Allows easy calculation of future values of investment. Enter beginning investment value, annual percentage rate, annual deposit amount, and number of years, to compute future value. V 2.0, includes source.

Lines Color line pattern generator, adapted from Mackie. V 1.1, includes source.

Mean18 Two custom golf courses for Mean 18.

Multic Formats a single column of input into multiple side by side columns. Includes source.

PageCnt Counts and displays number of form feeds in file, along with length of longest line. V 1.0, includes source.

Skel Skeleton workbench application that makes writing workbench programs easier. Provides routines for main, initialization and termination, gadget and menu han-

dling, argument processing, help window, about requester, etc. V 1, includes source.

SuperRelab Prints return address labels 3-up on single-wide 3.5 inch by 7/16 inch label stock. Can print up to 5 lines per label. V 1.1, includes source.

Verify Walks a directory hierarchy reading all files, reporting any that can't be entirely read. V 1.2, inc source

DISK 305

Fenster Can operate on windows owned by another program, to close them, change size, refresh gadgets, move window to background, etc. V 2.1, update to V 2.0 on disk 298. Includes source.

Lhwarp Will read tracks directly from floppy disk, compress them using adaptive Huffman encoding, and output to a file. Resulting file can be used by lhwarp to reconstruct image of original disk. V 1.20, update to V 1.03 on disk 295. New features include much faster compression/decompression, 32-bit CRC, and two additional compression methods. Binary only.

Mackie Versatile cli/macro-key initiator based on POP-CLI with unique method of "screen-blanking". I won't say more, just try it! V 1.4, update to V 1.8 from disk 267. Includes fixes to work with latest WShell and the new "hever" keyword. Includes source.

Obsess Real-time puzzle game like Tetris where object is to fit falling pieces together to form complete horizontal rows. Burning, exploding, and invisible pieces enhance game play. Other features such as a puzzle piece editor are included in version available directly from author. V 1.0, shareware, binary only.

PrFont Prints sample of each font from the fonts: directory. Draws one line of each font on custom hires screen, which can be printed. V 1.3, includes source.

Reversi Plays classical reversi game on an 8 x 8 square field. V 2.0, update to V 1.2 on disk 245. Includes source in assembly language.

SpaceLog Database containing data for all man related space missions of United States and Soviet Union that were related to development of manned space flight from beginning of space age to present (368 missions), listed in chronological order. Includes AmigaBASIC program to manipulate the database. V 1.54, binary only.

DISK 306

Life This new version of Life game includes a new torus option, an option to perform calculations with processor rather than blitter, and a couple of other minor changes. Update to version on disk 131, includes source.

RexxPIPlot Library of C functions useful for scientific plotting. Lattice C compatible. Contour plotting, three dimensional plotting, axis redefinition, log-log plotting and multiple subpages. Plots can be displayed on monitor or sent to graphics file for subsequent printing. This is RexxPIPlot V 0.3, update to Plotlet version 1.00 on disk 222. Adds ARexx interface, support for IFF output, support for PostScript output, support for Preferences, some new functions, bug fixes, etc. Includes source.

Tree Very simple directory tree traversal program, written primarily as aid to creating zoo archives and disk backups. Has options to exclude certain directories or files with specific extensions. Includes source.

DISK 307

DisaDemos Demo of MIDI Sample Wrench, which provides pro sample editing features for owners of musical samplers. V 1.1, binary only.

FileIO Disk based shared library to make filename selection easy for load and save routines using intuition interface. V 1.5, update to version on disk 257. Now includes ability to select multiple filenames and fixes some bugs in 1.4 version. Binary only.

Samp Documentation and interface library for IFF FORM "SAMP", 16-bit sampled sound file format. This format allows more than one waveform per octave. Includes utility to convert 8SVX files to SAMP format. V 1.0, binary only.

DISK 308

FRex General purpose file requester, designed to be easy to use and fast, with built-in ARexx port allowing you to use it from ARexx scripts or applications with ARexx ports. V 1.0, binary only.

ScreenShare Library and support programs that enable applications to open up windows on other applications' custom screens. Both applications must cooperate for screen sharing to work. V 1.21, update to V 1.2 on disk 248. Includes source for interface portions.

StarBlanker Screen blanker that replaces display with randomly chosen animated starfield. V 1.00, includes source in Modula-2.

Vit VLT is both VT100 emulator and Tektronix 4014 plus subset of 4105 emulator, currently in use at SLAC. Although the VT100 part was originally based on Dave Wecker's VT100, many enhancements were made.

Features include use of ARP, ARexx port, XMODEM 1KCRRC and Kermit protocols, support for additional serial ports, external file transfer protocols (XPR), "chat" mode, and scrollbar/review/history buffer. Comes in two versions, one with Tektronix emulation, and one without. Tektronix emulation allows saving IFF files, PostScript files, and printing bitmaps to printer. V 4.428, update to V 4.226 on disk 257. Major change for this update is rewrite of Tektronix emulation to support almost

all of Tektronix 4105 escape sequences. Binary only.

DISK 309

Bind A binding (glue) library builder. Takes standard ".ld" (function definition) file and generates binding library for functions defined in ".ld" file. V 1.2, update to version released with midlib on disk 227. Binary only.

Csh V 4.00a of csh like shell derived from Matt Dillon's shell. V 2.07, update to V 3.03a on disk 223. Changes include ARP pattern matching, improved search command, some new commands like "basename", some new options, bug fixes, ARexx port. Includes source.

SKsh A ksh-like shell. Includes command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. V 1.3, update to V 1.2 on disk 291. Binary only.

DISK 310

Mon Machine code monitor/debugger program, re-entrant and can be made resident. V 1.24, binary only.

UUCP Implementation of uucp for Amiga, including mail and news. Matt's V1.00 for Amiga, based on William Lotus's Amiga UUCP 0.40 release with news code from his 0.60 release, and months of work by Matt Dillon to make fixes and add enhancements. Inc source.

DISK 311

CroBots Game based on computer programming. Unlike arcade type games which require human input controlling some object, all strategy in CroBots is condensed into a C language program that you design and write, to control a robot whose mission is to seek out, track, and destroy other robots, each running different programs. All robots equally equipped, up to 4 may compete at once. V 2.1w, binary only, source from author.

Echo Replacement for AmigaDOS or ARP echo command. Provides easy color setting or positioning for all echoed strings. Completely compatible with AmigaDOS and ARP echo commands, all your old batch files should work correctly. V 1.08c, includes source.

Etime Will display elapsed time between events. Useful in scripts to display elapsed time between beginning and ending. Many options including color and time displayed as hh:mm:ss or total secs. V 1.05c, inc source.

Fortune Will randomly display "fortune" selected from fortunes file (supplied). "Fortunes" file is easily modified or added to by user, using any text editor. Provides color and speech by user option. V 2.04c, includes source.

Incr Will easily allow the user to keep a total count of any event run from a batch file. Will take a number from a file, increment it by one and display result. New count is written back to file. V 1.04b, includes source.

PKAZip PKWare ZIP tool. Provides functions to create, examine, extract, test, modify, display, and print files which are in ZIP compressed format. Uses full intuition interface with no CLI support. V 01.00, binary only.

Update Replacement for AmigaDOS date command, many options similar to UNIX date command. Set date and time via prompts or directly from command line, display any part of date or time using options in any color desired, also make automatic adjustment of system clock for Daylight Savings Time. V 1.15c, inc source.

DISK 312

ChinaChallenge Game similar to Shanghai or Mah-jong. Goal is to remove all parts of pile, so called Dragon, step by step. This dragon composed of 120 different game pieces. You can always find four pieces displaying same picture or chinese symbols. Binary only.

LHARC Archive program like Arc and Zoo, with heavy emphasis maximum compression for minimum archive size, using LZHUF compression. V 1.10, update to V 1.0 on disk 289. Changes include 20-50% faster compression, 17% faster decompression, file sorting, more efficient use of memory, new progress indicator display, and some bug fixes. Binary only.

Moonbase Guide a lunar lander to ferry cargo from orbiting space station to bases on surface of moon. You get cargo and fuel for lander by docking with space station. Goal is to complete all assigned cargo deliveries, and to destroy as few landers as possible. Binary only.

TrackSave Trackdisk patch which removes all known bugs and patches trackdisk task to allow enhancements, such as reading good sectors from partially bad tracks, write verification, write protect simulation, etc. V 1.0, includes source in C and assembler.

DISK 315

AmigaFox Text processor with graphics capabilities. V 1.00, binary only.

Drawmap For drawing representations of Earth's surface. Can generate flat maps, mercator maps, globe views and orbital views. V 2.0, update to V 1.0 on disk 229. Enhancements include dropshadows, user text entry and placement, improved event processing and better looking mouse pointers. Includes source.

Surf Generates bezier surfaces of revolution. Will produce amazing pictures of wineglasses, doorknobs, or other objects one could turn on a lathe. Includes cap-

ty to map IFF image files onto any surface that it can draw. V 2.0, update to V 1.0 on disk 170. Changes include support for data file formats that can be translated to input files for various 3D modeling programs, increase in number of grey shades available, capability of modifying endpoints of segments. Source included.

DISK 316

Formulae Implementation of basic propositional formulae manipulation routines in Scheme (on disk 149). Uses only essential procedures so it should run under any Scheme. Includes source in Scheme.

IFF2C Another IFF ILBM to C converter. Two unique features are ability to generate comments representing actual image, planes/pixels computation. V 0.30, inc source.

IntuiSup Shared library which implements extensions to Amiga operating system and graphical environment. Several example programs that make use of library, including nifty file requester from library's user interface routines. V 1.15, binary only. Source from author.

Life Another version of Tom's Life game. Includes torus option, option to perform calculations with processor rather than blitter, and more. V 5.0, update to version on disk 306, about 15% faster. Includes source.

SmartIcon Shareware, intuition objects/iconifier. V 2.0 is still limited to iconifying windows, which is still very handy. Adds a new "iconify gadget" to each window, that when clicked on, iconifies window into icon in ram: disk. V 2.0, update to V 1.0 on disk 214. Inc source.

Vectors Simple program to test how fast Amiga can draw lines. Two versions, 1.0 and 1.1, each of which performs tests slightly differently. Includes source.

DISK 317

StillStore Designed for freelance, corporate, and broadcast television. Loads and displays IFF images of any resolution interchangeably from list file or as inputted directly (i.e. random access). User may easily skip forward or backward one or more pictures in list. A "generic" display is always just a few seconds away. Can be used "on air" with no concern that a pull down menu will suddenly appear in viewable area. Provides for precise cue for changing windows or screens. While main purpose is to load "news windows" of 1/4 screen size, can also handle full-sized and overscanned images. Slide show modes and screen positioning feature. Written in Director. V 1.2, binary only, source from author.

Uniq Text processor which compacts repeated adjacent lines. Intended to be used with a sorted file to print unique lines, or repeated lines. Behaviour and options like UNIX version. V 1.1, includes source.

DISK 318

CNewsBin Part 1 of C News distribution. This part includes all binary and text files necessary to set up and run C News. Part 2 is on disk 319 and contains source.

Lhwarp Will read tracks directly from your floppy disk, compress them using adaptive Huffman encoding, and output them to a file. Resulting file can be used by lhwarp to reconstruct image of original disk. V 1.21, update to V 1.20 on disk 305. Binary only.

PKAZip PKWare ZIP tool. Provides functions to create, examine, extract, test, modify, display, and print files in ZIP compressed format. Uses full intuition interface with no CLI. V 1.01, update to V 1.00 on 311. Binary only.

WaveMaker Intended to give beginning music and physics students "hands on" feel for how complex waves are made by adding harmonic series of sine waves. A fundamental and up to seven harmonics are available. Resulting waveform can be displayed on screen or played on audio device using keyboard like a piano. Game mode also provided. V 1.1, inc source.

Xoper Very comprehensive program to monitor and control system activity. Monitor cpu, memory usage, ports, interrupts, devices. Close windows, screens, show loaded fonts or last Guru code number. Clean up memory, flush unused libraries, devices, fonts, etc. and lots more! Spawns own process. Very handy background task. V 2.2, update to V 2.0 on disk 274. Changes include mostly bug fixes and some minor enhancements. Assembly source included.

DISK 319

AHDM Amiga Hard Disk Menu. When placed in startup sequence, AHDM offers ten page menu, each page having up to ten possible actions. By double clicking on action, that action will execute any legal AmigaDOS command, program, or script file. This allows you to interactively select which programs you wish to start or packages to install at boot time. V 1.1a, binary only, demo version that only supports 2 pages of actions.

CNewsSrc Part 2 of C News distribution. Includes all source for C News and UUCP package it uses. Part 1 is available on disk 318 and includes all binary and text files necessary to set up and run C News on the Amiga.

Mathtrans Very small library which replaces mathtrans.library distributed by Commodore-Amiga, for those who own an MC68881/82 floating point unit. Calculation speed of some functions is increased up to 15 times. V 1.1, includes source.

DISK 320

AmigaTrek Continuation of Amiga Trek stories, parodies of Star Trek series, with an Amiga flavor. Earlier

Fish Disks 200-400

stories are on disk 278.

AmiOmega Amiga port of Omega game. Similar to hack or rogue, but much more complex. There is a city, several towns, wilderness, lots of dungeons, multitude of monsters, lots of spells, magic items, etc. Several quests to complete. Excellent game. Requires 1Mb or more of memory. Amiga version 1.0, binary only.

DISK 321

DezHexBin Intuition based programmers tool to convert integers between decimal, hexadecimal, and binary. Very small. V 1.1, includes source in assembly code. **IconJ** Significantly enhances IconX program, is 100% compatible. Allows scripts to be executed by double-clicking script's icon. Abilities include joining script with icon file itself, or calling it from any directory or disk, executing either AmigaDOS or ARexx scripts, outputting to any file or device, running interactive scripts and scripts that contain conditionals, creating relative console windows. Includes utility called Ataj which attaches or detaches script to/from icon file. V 1.0, inc source in JForth. Its Iterated Function System viewer which graphically displays iterated function systems and allows user to interactively create affine functions that define such systems. IFS can represent complex pictures very compactly. Simple IFSs can describe infinite number of different and interesting fractal displays. Includes number of displays. V 1.5, includes source in C.

Planets Some routines that compute location of planets (as viewed from specific point on earth) and phase of moon, for arbitrary date and time. Includes source. **Turtle** Shared library of "turtle" functions for drawing in a RastPort. Includes source in assembly and C. **UnixDir** Intercepts calls to dos.library to add the UNIX style '.' and '..' syntax for current and parent directories to file and path names. Includes source in assembly. **Whereis** Another "find-that-file" utility. Searches on (hard-)disk for a file(name) and displays path to that file. Some features are case independent search, wildcards, interactive mode (cd implemented), can display size and date of files, always abortable, can archive file-names for "ZOO" (like Inamsrecurdir), and no recursive procedures. Includes source in C. V 1.18 (2-15-90).

DISK 322

Gwin V 1.0. GWIN or Graphics WINDOW is integrated collection of graphics routines callable from C. These make it easy to create sophisticated graphics programs in C environment. One-line calls give you custom screen (ten types available), menu items, requestors, text, circles, polygons, etc. GWIN is a two-dimensional floating point graphics system with conversion between world and screen coordinates. Includes built-in clipping that may be turned off for speed. Use of color and XOR operations greatly simplified. Many examples include linebar graph program, geographic mapping program, Extensive documentation.

DISK 323

ColorTools Three tools that manipulate the colors of your screen. Binary only. **CZED** Complete mid package for use with all Casio CZ synthesizers. Full fledged sound editor, split simulator for CZ-101/1000/230S, bank loader and memory dump for CZ-1. Formerly commercial package now released as shareware. Binary only. **LinkSound** Two examples of functions you can link with your own code to produce short musical "beep" or sound similar to striking a drum. Includes source. **Show** Very versatile program to display IFF ILBM files. Features realtime unpacking scroll, smart analysis of any IFF file, total control over display modes, simple slideshow processing, etc. Only 9K. V 2.0, binary only.

DISK 324

ANSIED Demo version of ANSI screen file editor. Easily create and modify screen of ANSI-style text/graphics. Standard ANSI color set (red, green, yellow, blue, magenta, cyan, white) and text styles (plain, boldface, underlined, italic) provided, along with some simple editing and drawing functions. Has save features disabled. V 1.3.0, update to V 1.2.0aD on disk 221. Binary only. **DiskFree** Small iconifiable intuition program shows amount of free space on all mounted disk devices, numerically and graphically. V 1.0, shareware, binary only. **DPFFT** Enhanced version of DPlot from disk 290. DPlot is simple display program for experimental data, with goals of supporting paging through lots of data and providing comfortable scaling and presentation. Enhancements for DPFFT include addition of Fast Fourier Transform (FFT), display of customized amplitude and phase spectrum, prewhitening capability, and Welch window for spectral smoothing. V 2.1, binary only. **Mailchk** Mail client for Dnet, which will inform you of any new mail and give choice of viewing, deleting, or printing message. V 2.01, includes source. **Tetris** PD clone of popular Tetris type games. Written completely in assembly code. Very fast and responsive. Includes full source.

DISK 325

Batchman Execute CLI programs and batch files simply by clicking on gadget. Can be used as center of turnkey system, where user simply clicks on gadgets to

launch applications. V 1.1, includes source in Modula-II. **DClock** "Dumb Clock" utility that displays date and time in Workbench screen title bar. Uses only about 2 percent of CPU time and 10Kb of memory. Has alarm clock feature and audible beep for programs that call DisplayBeep. V 1.12, update to V 1.5 on disk 298, with many enhancements and a few bug fixes. Includes source. **DoRevision** Implements easy creation of source code revision headers (very similar to log headers at top of Amiga 'C' include files). V 1.0, includes source. **FAM** File Access Manager that allows multiple ARexx programs to access buffered version of directory in consistent and serialized manner. Buffers all names, dates, sizes etc for quick access. V 1.1, includes source. **FarPrint** Debugging functions for programs which don't have any links to their environment. Consists of two major parts: harbour process open to receive and distribute messages and requests, and set of C functions to be linked into any program wishing to communicate with the FarPrint main process. V 1.5, update to V 1.3 on disk 281, adds shared library as well as linker libraries for both Lattice and Aztec C. Includes source.

KeyMacro Keyboard macro program, configurable via text file, that also supports hotkey program execution. Map up to eight functions to each key, including cursor keys, return key, etc. V 1.0, includes source. **LifeCycles** Some sort of biorhythm type program. No docs included. V 2.0, binary only. **MemGuard** MemWatch-like program rewritten in assembly language for maximum speed and efficiency. Unlike MemWatch MemGuard does not run as Task in dummy loop but rather as low-level interrupt routine capable of trapping memory thrashing even before execution might know of it and even while task switching is forbidden. In fact low-memory area is checked each frame. Virtually no processing time is wasted, interrupt routine does check in about half a raster scan line's time. Uses some very delicate tricks to let interrupt routine work with intuition alerts. V 1.1, binary only.

RexxHostLib Shared library package to simplify ARexx host creation/management procedure. Rexx-message parsing also includes controlling ARexx from programs such as AmigaBASIC. Includes source.

DISK 326

CBDump CLI utility for those working with Amiga's clipboard device. Sole purpose is to dump current contents of clipboard to stdout or by redirection to pipe or file. Useful for testing and interfacing with programs that do not support clipboard. Source included. **DispMod** One of series of ROBBS (Rexx Object Building Block System) modules by Larry Phillips. Display module that only understands ARexx messages. It allows, under program control, display of text and acceptance of keyboard data. V 0.11, includes source. **Itb** Converts icon to IFF picture (brush) file. Handles both single and alternate image (animated) icons. Adds colour palette to previous version from disk 85. V 1.10, binary only.

MicroTerm Very small, very simple, terminal program. Primarily useful as example of how to talk to console and serial devices. V 0.1, includes source. **NeuralNets** Programs for playing with Neural Nets using Hopfield and Hamming algorithms. Binary only. **PopScreen** Small hack to pop hidden screen to front from CLI. Written to allow author to use VLTjr with other programs that also use custom screens. Inc source. **Snap** Tool for clipping text or graphics from screen, using clipboard device. Snap finds out character coordinates automatically, handles different fonts, keymaps, accented characters, and more. V 1.4, update to V 1.3 on disk 274. Includes source. **VSNap** Enhanced version of Snap 1.3, adds ability to save clipped graphics as IFF FORM ILBM's to clipboard, so they can be imported to other programs that understand IFF and clipboard. I have dubbed it VSNap, since official 1.4 Snap is also included on this disk. Includes source.

DISK 327

ARTM (Amiga Real Time Monitor) displays and controls system activity such as tasks, windows, libraries, devices, resources, ports, residents, interrupts, vectors, memory, mounts, assigns, fonts and hardware. Includes both PAL and NTSC version. V 1.0, update to V 0.9 on disk 277. Binary only. **MM** Implementation of game Mastermind. Try to guess a color combination which Amiga sets via random generator. There are 6 colors which can be set in any combination. Includes source. **MRBackup** Hard disk backup utility that does file by file copy to standard AmigaDOS floppy disks. Includes intuition interface and file compression. V 3.4, update to V 3.3e on disk 279. Binary only. **Mah** Amiga file system handler that handles MSDOS formatted diskettes. You can use files on such disks in almost exactly same way as you use files on native AmigaDOS disks. Fully functional, read/write version, supports 8, 9, or 10 sector disks of 80 tracks, and should also work on 40 track drives and hard disks with 12 or 16 bit FAT of any dimension FAT allows. Inc source. **Softfont** Converts portrait soft fonts for HP LaserJet compatible laser printers to landscape format. Includes source.

DISK 329

AnalysisCalc Full featured system for numerical analysis and reporting. Includes spreadsheet, graphics programs, documents and facilities for performing many commonly needed functions. Includes an 18000 by 18000 cell spreadsheet using virtual memory, random access to other saved spreadsheet formulas or values, easy save or merge of spreadsheets, up to 400 windows on screen, ability to drive any cell from external macros, built in matrix algebra, and much more. V 2.4-01a, update to V 2.3-2A on disk 176. Binary only.

Hames Some programs from Chris Hames. **DirWork** V 1.01 is fast, small, simple efficient DirUtility. **FSDirs** V 1.3 is floppy accelerator program. **VMK** V 2.7 is small virus detector/killer that knows about 27 different viruses and can detect new ones. **Nolife** V 1.0 stops programs from producing ".info" files. Binaries only. **RoadRoute** Trip planner that takes list of cities and list of known routes between cities, and generates distance and time required to reach destination. Update to V 1.0 on disk 251, with expanded database of cities and roads. Includes source.

DISK 329

CPU Two programs, one in C and one in assembler, which check for CPU type. Can detect 68000, 68010, 68020, and 68881 processors. Includes source. **DiskSpeed** Disk speed testing program specifically designed to give most accurate results of true disk performance of disk under test. Automatically updates and maintains ASCII database of disk results for tested disks. V 3.1, update to V 2.0 on disk 288, with some source code cleanups and stress tests for CPU and DMA. Includes source in C.

Empire Complete rewrite, from ground up, in Draco, of Empire game. Multiplayer game of exploration, economics, war, etc, which can last couple of months. Can be played either on local keyboard or remotely through a modem. V 1.33w, update to V 1.0 on disk 118, includes many changes and enhancements. Binary only. **FileSystems** Displays AmigaDOS disk devices with information about head geometry, **BulMemType**, and lower level exec device. Includes source. **OnePlane** Removes highest number biplane from Workbench screen. Normally used to take Workbench screen from 2 biplanes to 1 biplane. This allows CON: style devices to scroll text faster. Includes source.

DISK 330

Mostra Very versatile program to display IFF ILBM files. Features realtime unpacking scroll, smart analysis of any IFF file, total control over display modes, simple slideshow processing, pattern matching, and dozen other options. Only 14K. V 1.0, upgrade to Show program on disk 323, adds SHAM, double buffering, faster decompression, color cycling, **TeXdocs**, startup files for easy customizing, and complete Workbench support through ToolTypes and Style icons. Binary only. **Palette** Tool to change another program's custom screen colors. V 1.1, update to version on disk 55. New features include checks for Workbench startups, checks for HAM, Half Brite, or more than five biplanes, and more graceful exits. Includes source in assembly. **Vt100** A vt100 emulator for the Amiga, which also supports various file transfer protocols like kermi, xmodem, ymodem, zmodem, etc, has an ARexx port, can use custom external protocol modules, and more. V 2.9a, update to V 2.9 on disk 275. Includes source. **XprKermit** Amiga shared library which provides Kermit file transfer capability to any XPR-compatible communications program. Supports V 2.0 of XPR Protocol specification. V 1.5, includes source.

DISK 331

CRobots Game based on computer programming. Unlike arcade type games which require human input, all strategy in CRobots is condensed into C language program that you design and write, to control robot whose mission is to seek out, track, and destroy other robots, each running different programs. All robots are equally equipped, up to four may compete. V 2.2w, update to V 2.1w on disk 311. Binary only, source from author. **Csh** V 4.01a of csh like shell derived from Matt Dillon's shell. V 2.07. Update to V 4.00a on disk 309. Changes include mostly bug fixes and corrections. Inc source. **IFFEx** Converts IFF pictures to executable. Can handle NTSC/PAL, interface and overscan. V 1.0, binary only. **LhArca** Intuitionized and faster version of lharc. Requires ARP library. V 0.99a, binary only. **LVR** Link Virus Remover. Recursively searches directories for link viruses in executable files. V 1.20, binary only.

NTSC-PAL Utilities which allow Amigas with new ECS 1Mb Agnus to easily switch between PAL and NTSC display modes. V 1.0, includes source in assembly. **PatchLoadSeg** Patches loadseg routine to automatically detect link viruses when program is loaded. Displays an alert when virus is detected in a program being loaded for execution. V 1.20, includes source.

VirusUtil Two programs to detect viruses on disk and in memory. **VirusHunter** removes all known viruses in memory. **Viruskiller** removes all known viruses in memory and after removing, disks can be checked without virus copying itself to disks. V 3.60, binary only.

DISK 332

AniPtrs Some cute animated pointers. Binary only. **DevPatch** Installs patch for OpenWindow to check NewWindow structure. If file matches specific string, height will be forced to 45 pixels. This helps to reduce chip memory usage for programs that open overly large windows and then seldom use them. Includes source. **Helper** Little InputEvent hack, activated via HELP key. Originally meant to provide unique method of giving user help (you don't have to put that help stuff into your own program). Now also contains color requester and small notepad. V 1.01, includes source. **K1_Editor** Editor for Kawai K1(m) synthesizer with two auxiliary programs for managing sound dumps. V 1.00, shareware, includes source. **Kryptor** Small, simple and comfortable file encoder/decoder. V 1.0, includes source. **RevBut** Another InputEvent hack, giving you a toggling right mouse button. V 1.0, includes source.

DISK 333

MultiPlot Package for making 2D plots conveniently. Nice user interface, support for the PLT: device, and support for file conversions. PLT: handler which emulates plotter by accepting HP-GL commands, creating a raster image, then dumping it to any preferences supported graphics printer. V XLNb, an update to version XLN on disk 292, includes many bug fixes, style changes, and enhancements. Includes source.

DISK 334

FBM Amiga port of Fuzzy PixMap image manipulation library. Allows manipulation and conversion of variety of color and B&W image formats. Supported formats include Sun rasterfiles, GIF, IFF, PCX, PBM bitmaps, "face" files, and FBM files. Also has input converters for raw images, like DigiView files, and output converters for PostScript and Diablo graphics. Other image manipulation operations supported include rectangular extraction, density and contrast changes, rotation, quantization, halftone grayscale, edge sharpening, and histograms. V 0.9, binary only.

PPMore A "more" replacement program that reads normal ascii text files as well as files crunched with PowerPacker. Crunched files can result in considerable disk space savings. V 1.5, binary only.

PPShow A "show" program for normal IFF ILBM files or ILBM files crunched with PowerPacker. Decrunching is done automatically as the file is read. V 1.0, binary only. **Whate** Neat little utility which not only recognizes wide variety of file types (executables, IFF, icons, zoo files, etc), but prints interesting information about structure or contents of recognized file types. V 1.2a, binary only.

DISK 335

BoingDemo Demo version of neat game. Fully functional but play time is limited to five minutes per play. V 0.30, binary only. **DTC** Utility providing simple calendar which can hold and show appointments. Provides day, week and month at a glance for any date between 1/1/000 and 12/31/9999, defaulting to current date. Menu driven and fairly easy to use. Includes source in Fortran. **SeeHear** Program to do spectrogram of sampled sound file. Graph with time on one axis, frequency on other and sound intensity at each point determining the pixel color. With source in C, including FFT routine. V 1.1.

DISK 336

Car Two-dimensional full screen scrolling racing game with realistic four channel stereo sound and overscan, for either NTSC or PAL. Goal is to guide your car around one of ten selected tracks. Each track has its individual high score list. V 2.0, binary only. **FileWindow** Completely public domain file requester which may be used in any program, even commercial ones. Uses dynamically allocated memory to hold file names so only limitation is amount of memory available. Includes filter option to limit display of filenames to only ones with specific extension. Names automatically sorted while being read and displayed. V 1.10, inc source. **MiniBlast** Shoot'em up game which runs just fine in multitasking environment. Enjoy satisfying megablast while writing boring essay. Shoot anything that moves, if it doesn't move, shoot it anyway. V 1.00, binary only. **Sys** Game built on addictive game Pongo but with several added features. You are assigned demanding task of cleaning viruses from your SYSP's hard disk. To kill a virus, you simply click a disk at it. Fifty different levels, and on each level, speed will increase and viruses will be smarter and start to hunt you. V 2.10, binary only.

DISK 337

CManual Complete C manual for Amiga which describes how to open and work with screens, windows, graphics, gadgets, requestors, alerts, menus, IDCMP, sprites, etc. Manual consists of more than 200 pages in 11 chapters, together with more than 70 fully executable examples with source code. When unpacked, fills three floppies. V 1.00, includes source for all examples.

DISK 338

Cpp Copy of Decus cpp, ported to Amiga. More powerful and complete than either of built in cpp's in Manx or

Lattice C. Update to version on disk 28. Has had some ANSI features added. Includes source.

SASTools Various submissions from "Stick Amiga Soft". Includes some virus tools, screen hacks, small games, and miscellaneous utilities. Includes source in assembly and Modula-II.

SID Very comprehensive directory utility for Amiga that supports at least a couple of dozen different commands for operating on files. V1.06, binary only.

DISK 339

PCQ Freely redistributable, self compiling, Pascal compiler. The only major feature of Pascal that is not implemented is sets. V 1.1c, update to V 1.0 on disk 183. Much enhanced and about four times faster. Includes compiler source and example programs.

DISK 340

NorthC Complete freely redistributable C environment for Amiga based on Socoob Ltd C compiler, Charlie Gibb's assembler, Software Distillery's linker, and portions from other sources. Everything pulled together and some enhancements added. V 1.0, partial source only.

PlotLib Library of C functions useful for scientific plotting. Lattice C compatible. Contour plotting, three dimensional plotting, axis redefinition, log-log plotting and multiple subpages. Plots can be displayed on monitor or sent to graphics file for subsequent printing. V 2.6, update to V 1.0 on disk 222. Includes greatly improved intuition interface, preferences support for hardcopy, several new device drivers, and capability of adding additional device drivers easily. Includes source.

SpeakerSim Demo version of SpeakerSim 2.0, a loudspeaker CAD program. Simulates vented (Thiele-Small) and closed box systems. Also simulates 1st, 2nd, and 3rd order high and low pass filters. Binary only.

DISK 341

P2C Tool for translating Pascal programs into C. Handles following Pascal dialects: HP Pascal, TurboUCSD Pascal, DEC VAX Pascal, Oregon Software Pascal/2, Macintosh Programmer's Workshop Pascal, Sun/Berkeley Pascal. Modula-2 syntax also supported. Most reasonable Pascal programs are converted into fully functional C. V 1.13, includes source.

DISK 342

IE Icon editor which can create and modify icons up to 640x200 pixels in size (also dual render). Can set stack size, position of icon (also free-floating), default tool, 10 tool types and control over opened window. Can also generate C source code behind icon for program inclusion. V 1.0, binary only, source available from author.

SKsh A ksh-like shell. Includes command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, coexistence with scripts from other shells. Very well documented. V1.4, update to V1.3 on disk 309. New features include "tiny" version, working case construct, support for resident commands, smaller faster external commands, etc. Binary only.

Softfont Converts portrait soft fonts for HP LaserJet compatible laser printers to landscape format. Update to version on disk 327. Includes source.

DISK 343

SnakePit Simple, yet addictive game in which you must get the snake (you) off the screen. There are, however, some rough spots and some obstacles that may need to be overcome. An excellent example of a game that is as system friendly as possible. Includes source.

SoftSpan Soft Span BBS program. Intuitive, command-line base menu system with message bases, up/down loads, file credit system, extensive help system, etc. Shareware version 1.0, binary only, Lattice C source code available from the author.

StockBroker Helps you follow the recent table of exchange from one (or more) share(s). But of course you must tell Amiga recent table of exchange every day. Requires AmigaBASIC. Binary only.

DISK 344

Keyboard Functions to translate RAWKEY intuition messages into usable keycodes. Translation into Modula-2 of C source on disk 291. V 1.0. Includes source.

RKMCompanion Two disk set of material created by Commodore for use with 1.3 revision of Amiga ROM Kernel Reference Manual, Libraries and Devices. Almost 300 files, including C source code examples and executables, packed into two 1harc archives, one for each disk of the two disk set. These examples are not public domain, but may be used and distributed under conditions specified in copyrights.

DISK 345

CRobots Game based on computer programming. Unlike arcade type games which require human input, all strategy in CRobots is condensed into a C language program that you design and write, to control a robot whose mission is to seek out, track, and destroy other robots, each running different programs. All robots are

equally equipped, and up to four may compete at once. V 2.3w, update to version 2.2w on disk 331. Binary only, source from author.

Du Prints number of disk blocks used in selected files or directories. Modified from version on disk 48 to make output more readable, and handle "C" exit. Incl source.

GetImage Enhanced version of "g" from disk 14. It now looks for GRAB marker, in brush file, instead of assuming that it is at a specific place, sets up PlanePick value in image structure, and deletes any unused bitplanes to save memory and disk space. Includes source.

MemFrag Displays number of memory chunks/sizes to show memory fragmentation. Chunks are displayed as 2"N bytes, a rough guide but still useful. Enhanced version of "Frag" from disk 69. Includes source.

Roses Draws sine roses. Implements algorithm in article "A Rose is a Rose ..." in American Mathematical Monthly. A sine rose is a graph of the polar equation $r = \sin(n \cdot \theta)$ for various values of n and d .

Unshar Extracts files from Unix shar archives. Scores over similar programs by being small and fast, handling extraction of subdirectories, recognising wide variety of 'sed' and 'cat' shar formats, and handling large files spread across several shar files. V 1.3, update to version on disk 287. Includes C source.

VcEd A Voice (Tone) Editor for the Yamaha 4 Operator series synthesizers. Binary only, source from author.

X2X Cross converts between Motorola/Intel/Tektronix ASCII-hex files. These files are typically used for downloading into EPROMs, or for transmission where binary files cause chaos. Handles S1, S2, S3, INTEL (inc USB records), Tektronix (inc exten). Source included.

DISK 346

Az Nice little text editor, fast, simple to use, very Amigaized. V 1.50, update to V 1.40 on disk 228, lots of new features, bug fixes, improvements. Binary only.

CaseEti Cassette tape label printer. Includes source in GFA Basic.

FME Patch to AllocMem() to allow badly designed programs which request fast mem without necessity to be run on 512k machines. Includes source in assembler.

GoWB Very small (296 bytes) and effective replacement for well known "LoadWB" and "EndCL" command pair. This release fixes severe bug in first version which used to guru if run out of a script. Includes source in C.

PacketSupport Link library, for use with Lattice C, providing a few functions to handle DOS packet postage. Includes source.

PatchNTSC OS fix to allow growing number of PAL display programs to be run on NTSC machines. Will patch Intuition OpenScreen() function to assure screens with PAL height to be opened in interface mode. Includes source in assembler.

TextPaint Second major release of Ansi editor. All major bugs fixed, and bunch of new options added, e.g. possibility to reload ansi files or CLI modules, 4 color option, optimized keyboard layout, new drawing modes, right mouse button support, etc. Binary only, shareware.

TimeTest Working example to show time() and gtime() functions of Lattice C support library. Incl source in C.

WBD Possibly smallest utility to set workbench screen to any depth. Includes source in C.

DISK 347

Cursor A 3-pass BASIC Compiler for BASIC programs written in AmigaBASIC, does not yet support all BASIC commands but can:

Drip Arcade style game along pipes of each floor and rust them to advance to next level. Every 3 floors completed will entitle you to bonus round where extra drips can be won. Binary only.

DISK 348

ColorReq Describes update to color library and has example program, with source, that demonstrates its use.

SoftwareDisEditor Demo of dissidents shareware text editor. V 1.1, binary only.

DisSecretary Can be used to file information in a "file cabinet" type environment. Well suited for jobs such as maintaining a disk catalog, or user group membership, etc. Includes data file of library catalog, disks 1 to 310. V "Wanda", binary only.

FileIO Contains updated files for V 1.6 of dissidents requester library. Bug fix to library and new function. See disk 257 for complete documentation, and examples.

ILBMLib Contains updated files for dissidents libm library on disk 237, with new lib features and new library. Also is much improved (better organized) doc file, and new C examples that show how to use library for any kind of IFF file. See disk 237 for other examples.

InstallLibs To copy files to LIBS: dir of boot disk. Can be used to create handy installation program (hard disks especially) for programs that need disk-based libraries. Includes source.

SAMP IFF sampled sound format designed for professional music use. Can be used for 16-bit samples, multiple waveforms, etc. Includes SAMP reader/writer shared library, interface routines, and programming examples. Also a program to convert 8SVX to SAMP.

DISK 349

MED Music editor much like SoundTracker. A song consists of up to 50 blocks of music, which can be played in

any order. Editing features include cut/paste/copy tracks or blocks, changing the vibrato, tempo, crescendo, and note volume. Other features include switching of low-pass-filter on or off on a per song basis, and cute little animated pointer of guy doing "jumping jacks" in time to music! V2.00, update to V1.12 on disk 255. Now includes full source.

DISK 350

Icons Large variety of icons for many uses, of practically every description. Most are animated.

MemMometer Opens a narrow window and graphically displays your memory usage like a gauge. Based on WFrags. V2.10, includes source.

Stitchery Shareware program loads in IFF images and creates charted patterns from them for use in counted cross-stitch and other forms of needlework. Requires 1Mb to run, and works best with good high-resolution printer for printing patterns. Written with The Director and the Projector is included. V 1.21.

TrackUtils Two utilities that deal with disk tracks. TCopy copies one or more tracks from one disk to another, and is useful for copying part of a floppy disk into RAD: during bootup. TFile creates a dummy file which "marks" a specified range of tracks, preventing AmigaDOS from using them and allowing them to be used for raw trackdisk data. Includes C source.

DISK 351

PDC Publicly Distributable C (PDC) is complete C compilation system including compiler, assembler, linker, librarian, and numerous utilities, documentation files, libraries, and header files. Supports many ANSI features including all ANSI preprocessor directives, function prototyping, structure passing and assignment. Supports Lattice C compatible libcal pragmas, precompiled header files, builtin functions, and stack checking code. V 3.33, includes full source.

DISK 352

MG Beta version of mg3, including ARexx support. Probably most stable beta for the next year, as many new features going in after this. Sources compressed with lharc to fit on disk. Update to mg2b on disk 147.

PrintHandler Custom PRT: driver which offers easy single sheet support as well as limited data spooling. V 1.6, almost entirely rewritten update to V1.1 on disk 282. Includes source in C.

TreeWalk File tree walking subroutine designed to be fast, robust, and not use a lot of any critical resource. Includes both CLI interface to that routine the form of a find-like utility that uses C expressions instead of Unix-like flags, and program to tell if directory trees will fit on given disk, or how many extra blocks you'll need if they won't. Includes source. Update to version on disk 289.

DISK 353

AztecArp Arp package fixed to work with 5.0 release of Aztec 'C' compiler. Original Manx support files were incomplete, contained bugs preventing them from working properly, had wrong linker format. Includes source.

CompDisk Disk compression/disk compression package written to be fast and easy to use. Includes Arp and Intuition interface. Includes source in C.

NorthC Complete freely redistributable C environment based on Socoob Ltd C compiler, Charlie Gibb's assembler, Software Distillery's linker, and portions from other sources. Steve has pulled everything together and enhancements in the process. V 1.1, update to V 1.0 on disk 340. Partial source only.

DISK 354

FastBlit Small tool to speed up blitter operations by up to 60%. V 1.0, binary only.

KeyMacro Keyboard macro program, configurable via a text file, that also supports hotkey program execution. You can map up to eight functions to each key, including cursor keys, return key, etc. V 1.4, update to V 1.0 on disk 325, which fixes bugs in V1.0. Incl source in C.

MandelMountains Renders three-dimensional images of blowups of Mandelbrot set. Includes several example images. V 2.0, update to version 1.1 on disk 295. Shareware, binary only.

MemGuard MemWatch like program rewritten in assembly language for maximum speed and efficiency. Unlike MemWatch, MemGuard does not run as task in dummy loop but rather as low-level interrupt routine which is capable of trapping memory trashing even before exec might know of it and even while task switching forbidden. Villa, update to V1.0 on disk 325, binary only.

MXMLib An example Amiga shared library compiled with Aztec 'C' 5.0. Contains basic support functions employed by programs such as KeyMacro or PrintHandler. In short: mxm library is the standard MXM system support library. V34.14, includes source.

DISK 355

Berserker Viruskiller which checks for certain conditions indicating possible virus infection. Different from other programs of this kind, does not rely on checksums only, it will also check the possible virus behind the altered checksum. Therefore even new viruses with old infection methods can be traced and resident tools are not touched. Includes source in assembly language.

ImageEditor Simple to use graphics editor which allows you to draw and save images/sprites as assembler or C source code. Includes IFF support, undo, and iconify function. Also small memory usage so you can use multitasking even on a 512k machine. Maximum picture size 166*58 pixels. V 2.4, includes source.

LoadImage IFF ILBM reader that accepts overscanned pictures, allows you to scroll around in the bitmap if the picture is larger than the current display, works on both PAL and NTSC, supports color cycling using interrupt code, and supports printing of image portions. V1.11, update to V 1.9 on disk 281, includes source.

RexxHostLib Shared library package to simplify ARexx host creation/management procedure. Rexx-message parsing is also included making it possible to control ARexx from programs such as AmigaBASIC. V 3.12 recompiled and made a lot shorter using Aztec 'C' 5.0, update to version 1.6 on disk 325. Includes source.

SoundEditor An 8SVX stereo sound file editor written in assembly language for speed and minimum size. V 1.8, binary only.

TrackSalve Trackdisk patch which removes all known bugs, and one unknown so far, and patches Trackdisk task to allow enhancements, such as reading good sectors from partially bad tracks, write verification, write protect simulation, auto motor off, auto update and turning off clicking. Also MFM-update and I/O by non-chip buffers. V 1.3, update to V 1.0 on disk 312. Includes source in C and assembler.

Tron Another game about lightcycle race sequence in science fiction computer film "Tron". One or two players and other options. Written in GFA-BASIC and then compiled. V1.1, binary only.

DISK 356

AlgoRhythms Algorithmic composition program that improvises music over a MIDI interface connected to the serial port. MIDI interface and synthesizer are needed. The music does not have a strong pulse, and does not repeat motifs or melodies, but can be very pretty. V 1.0 with source in C, and sample data files.

NComm Communications program based on Comm version 1.34, with lots of very nice enhancements. Also includes several auxiliary programs such as AddCall, CallInfo, GenList, PbConvert, and ReadMail. V 1.9, update to V1.8 on disk 230. Binary only.

DISK 357

Empire Multiplayer game of exploration, economics, war, etc, can last couple of months. Can be played either on local keyboard or remotely through modem. V 2.1w, update to V 1.33w on disk 329. Changes: client-server system, chat/CB mode, realtime private player to player messages, other enhancements. Binary only.

DISK 358

Blob Another screen hack. Makes red drops of slime flow down your screen. V 1.1, includes source in C.

OPSSC Compiler for expert system language OPSS. Takes OPSS source code as input and creates C source code file to be compiled to create an executable. Arbitrary C code may be linked with the executable and executed as a result of firing rules. System's strong point is its speed and as a result it sometimes has large executables and large memory requirements. At least 1 Meg. of memory suggested. Binaries only for compiler and run-time library. V 1.08a. Requires C compiler.

Pipeline Game like the commercial game "Pipe dream" (Pipe mania). Needs a joystick and PAL display. High scores saved to disk. V1.0, includes source.

ReDate Scans disk and dates each directory according to most recent item contained within (not including .info files). Ideal for use after a COPY ALL CLONE, where the directories are CREATED rather than copied and thus lose date information. Inc source in assembler.

RoadRoute Revision of trip planner program to find "best road route" between any two points of travel. User encouraged to customize files CITIES and ROADS to suit travel interests. V 1.5, update to original version on disk 251, makes provision for very large city menus and itineraries. You might like to use files from disk 328.

Also includes RoadScan, checker for RoadRoute files (CITIES and ROADS). Very large files may contain goofs (cities with no roads, the same road entered twice, etc.), or oddities (direct road not as fast as multi-point). These are pointed out. Includes source in C.

ScanIFF Scans through IFF file, identifying elements. Faster than standard utility IFFCheck since uses Seek, but does not do IFFCheck's detailed format checking. Intended for use as "template" from which programmers can code their specific application. For example, an expanded version has been used to extract instrument data from music files. Includes source in assembler.

ViewDir LIST type of utility showing contents of disk or directory. For directories, shows SIZE. For files, identifies TYPE if possible. Update to original version on disk 251. Now works with SPAT for pattern matching, and has small style change. Includes source in assembler.

DISK 359

ABridge Interim solution to Anim-5 incompatibility problems. Identifies origin of an Anim-5 file and modifies it to facilitate easy exchange between AniMagic, Videoscope, Animation Station, DPaint III, Animation:

Fish Disks 200-400

Editor(V1.11), The Director, SA4D, Movie2.0, Photon Paint 2.0 and Cel Animator. Fully initialized interface, full ARexx support. V1.0, shareware, binary only. DICE Dillon's Integrated C Environment. A C frontend, pre-processor, C compiler, assembler, linker, and support libraries. Also includes editor, dme, ANSI compatibility, many code optimizations, and autolink routines (user routines called during startup before main is called). V2.02, shareware, binary only. TextPlus Word processor for Amiga, with both German and English versions. Enables you to write letters, books, programs etc. In a very easy and comfortable way. V2.0, binary only.

DISK 360 UUCP Implementation of uucp for the Amiga, including mail and news. Matt's version for the Amiga, based on William Loft's Amiga UUCP 0.40 release with news code from his 0.60 release, and months of work by Matt to make fixes and add enhancements. V1.06D, update to V1.03D on disk 313. Includes source.

DISK 361 Brush 4D Converts IFF images into Sculpt 4D object format. Works with any IFF image, including HAM & Extra Halibute. Convert brushes in full color, with optional wrap, to 3D shapes. Also includes optimization routine. V1.00, shareware, binary only. FileMaster File editor like NewZap or FedUp, to manipulate bytes of a file. Also change file size or execute a patch. V1.20, update to version on disk number 298, includes source in assembly. TextPaint V 0.97 of Ansi editor. Significant enhancements and bug fixes since V 0.90 on disk 346. Binary only.

Turn Interesting board game with simplicity of checkers yet requiring "move-lookahead" of a good chess player. Binary only.

XColor-Lib Link library with full-fledged color requestor and several color functions like copy, spread, exchange, antique black & white, etc. to create own custom color requestors. Several demos and include files for C, AmigaBasic, DevPac Assembler and KickPascal.

DISK 362 ArchEdge Intuition interface for several of more popular archiving utilities such as ARC, ZOO, LHARC and PAK. Includes "Auto-Pad" function that will automatically add morsels for modem. V1.5, inc assembly source. Fenster Can operate on windows owned by another program, to close them, change their size, refresh gadgets, move window to background, etc. V2.2, update to V2.1 on disk 305. Includes source in assembly. Imperium_Romanum Strategic, "RISK" style game for up to four players. Based in ancient times of Rome, Athens, Alexandria and Carthago. Binary only, shareware (\$10). C source available from the author. V1.50E. KeyMenu Allows fast, easy access to pull-down menus from keyboard without having to remember all the special amiga key sequences. V1.01, binary only. MemRoutines Some "plug-compatible" replacements for the Lattice C functions memcpy(), memmove(), and memset(). Unlike Lattice functions that deal with data one-byte at a time, these deal with long word chunks, which can improve performance of Amigas equipped with a 68020 or 68030. Includes source in assembly.

PUZZ Very nice implementation of sliding-block-puzzle concept. Good graphics and ability to create your own puzzles using IFF ILBM file and text file. Includes source and several sample puzzles. V1.0. Rubik Another 3D Rubik's cube solver independently authored from version on disk 285. V1.0, inc source. MOVIE Smooth scrolling text display, useful for creating video titles, slide show intros, etc. Includes source.

DISK 363 BootBase Another bootblock save/restore utility. Includes auto-compare function. Includes source. LabelPrint3.5 Allows you to easily print labels for your disks. V3.5, update to V3.0 from disk 277. Shareware, binary only (source available from author). MigaMind Small Workbench "Master-Mind" type game. Includes source.

PLW Phone-Line-Watcher. For users of Hayes compatible modems. Monitors serial port and records all incoming calls. Current version only allows remote user to receive predetermined message, login, and leave reply. Possible updates will allow them access to AmigaDOS. V1.1, binary only.

RandomSams Random sound samples at random times, with random volume, random cycles, and a bit random period. Will definitely catch attention of unsuspecting user (particularly one that has the stereo turned up) when a lion suddenly roars as they're typing away on their favorite word processor! User modifiable start-up configuration file. Inc source, some sample sounds. SampleScanner Bypasses Amiga Dos file system and scans disk directly, block by block, for sound samples. You "hear" disk as it is being scanned. If sample is found, can be saved to disk for editing, direct use, etc. WO Intuition-based address book that allows saving of data in normal or password-encoded form. V1.0, includes partial source, (password encoding routines not included).

DISK 364 Aniptr2 More animated pointers to "liven" up your display environment. Binary only. DPFFT Update to version on disk 324. Ability to plot a Fast Fourier Transform (FFT) of data, customized amplitude and phase spectrum, prewhitening capability, and Welch window. V2.2, binary only. Iconaholism Some very nice looking icons designed for 8-color WorkBench. Includes script files to view icons in their intended colors.

MemLook Similar to "MemFlick" on disk 206. Gives sort of graphical view of machine's entire memory area. Memory gauge and controllable scrolling speed via cursor keys. V1.1B, binary only, source from author. SNAG Pointers Results of Southern Nevada Amiga Groups (SNAG) first animated pointer contest.

DISK 365 Badger Reminder program for startup-sequence. Will open window and display any important events "due". Will not bother you if nothing to report. Events are entered via menu and prompts. Binary only, shareware. DmeAsm Utility for those who use Dme editor and DevPac Assembler. A CLI command file that takes source code as parameter and opens window similar to Assembler window inside Devpac (Genam2) and gives similar options. If no parameter is supplied window will still open, supply your own. V1.1, inc source in assembly. EasyBackup CLI-based hard-disk backup/restore utility. Incremental backups by archive bit status, by datestamp, or command-line query. Incremental backups can be appended to existing backup set. Includes source. EasyMouse Another threshold-mouse-accelerating, screen-to-back, window-to-front, mouse-blanking, screen-blanking, auto-window activating, low-memory-warning, auto-window sizing dock! V1.0, inc source. TrackDos Allows easy transfer of data between DOS, memory and trackdisk device. DOS means data contained within a file, memory means data contained anywhere within memory map and trackdisk device means data stored on disk not accessible with DOS (eg. boot-blocks special loader disks etc.). Transfer of data between these areas is not normally easy or convenient. TrackDos was written to overcome this. Binary only.

Password Enhances computer security by making it complicated enough that users without your password will get discouraged trying to boot and use your system. Should keep out most casual or non-technical users. Update to version on disk 243. Version 1.42p, binary only. Update Replacement for AmigaDOS date command, containing many options similar to UNIX date command. Will set date and time via prompts or directly from command line, display any part of date or time using options in any color desired, and also make automatic adjustment of system clock for Daylight Savings Time. Update to version on disk 311, slightly smaller and works correctly with 68030. V1.14c, binary only.

View80 Very impressive scrolling text file reader. Three scrolling modes, controllable via keyboard or mouse. Opens file requestor if no filename given. Automatically configures screen size for PAL or NTSC. Sample operation in reading document files. V1.1, includes source.

DISK 366 3DTicTacToe Three-dimensional "four-in-a-row" version of TicTacToe, human against computer. V1.2, binary only.

DosError Small CLI utility that will return slightly more verbose description of DOS error code than that returned by System. Can save trip to manual for vague or unfamiliar error codes. V2.0, inc source in assembly.

IntuiFace Intuition interface that handles important functions of creating, inserting, extracting and listing files for three popular archiving utilities: ARC, ZOO and LHARC. V1.00, binary only, shareware.

LoanCalc Entirely keyboard driven mortgage utility. Unique in that it is designed to track "Open" mortgages that allow any size payment to be made at any time as well as providing an amortization table for fixed mortgages with monthly, semi-monthly, bi-weekly and weekly payment schedules. V1.2, binary only.

MakeWords "PhoneWord" takes full or partial telephone number and attempts to create word from various "alphanumeric" combinations. "Unjumble" may be useful in solving newspaper "Scramble". Includes source.

MeMeter Small utility for monitoring memory usage. Unique snapshot facility to store current numbers, launch program, see how much memory it requires, and program, see if it returns all memory. V2.1, binary only. NDebt Amusing, but saddening, opens a small window that displays continuously updated tally of America's national debt. V1.1, includes source.

PrintStudio Very nice intuition-based general purpose print utility that prints text with variety of options. Prints several graphic formats with yet more options. Print any part of picture, print screens and windows, save screens and windows as IFF files, modify color palettes, change parameters! V1.2, binary only, shareware.

DISK 367 Enigma's Nifty graphic simulation of World War II German Enigma-Machine, message encoding/decoding device that produced extremely difficult to crack cryptographic code. Binary only.

GwPrint Intuition-based text file print utility. Many adjustable features for controlling pagination, headers, trailers, margins, date and page-numbering and various print styles/sizes. V2.0, binary only, shareware.

HyperDialer Database for names and addresses, full intuition interface. Dynamically allocated, with configurable script startup file. Iconifies to titlebar icon. Search, sort, insert, delete, full file requestors. Uses modem to control dialing of multiple phone numbers. Binary only, shareware, with source available from author.

SCM Screen Color Modifier. Palette program that allows changing/saving/loading of screen's colors. Includes separate loader program that can be used in batch files to set screen's colors to predefined values after program has been launched. V1.0, binary only.

SuperView Shareware file-viewer that displays all types of IFF files with many features like: Workbench support, all display modes, auto overscan, color cycle (CRNG, CRR), AmigaBasic ACBM files, first cell in and ANIM file, Type 5 animations and more. Written in assembly, pure code for residency under 1.3. V3.0, binary only. Tricky Innovative and addictive game. "Video-bowling" concept where object is to wipe out groups of "computerized" symbols in such a fashion that last item hit becomes target for next ball (with a few tricks of course). Lots of levels and usual level editor. Binary only.

DISK 368 Elements Very nice interactive display of Periodic Table of Elements. V2.0, update to V1.3a on disk 297. Adds general row and column information, plus test mode where program asks specific questions about selected element or row/column. Binary only, shareware. MillerGraphicsPak Set of functions for general graphics operations such as boxes/lines, blitting, and opening/closing libraries. Used by both of PopMenu and List-Window test programs. Includes source.

Lila Shareware utility to print listings or other text files on Postscript printers, with header, page numbers, and multicolumn pages. Portrait or landscape orientation. V8912a, binary only.

ListWindow Gives simple initialization, handling, and freeing of Macintosh-like "list-windows." These are user-sizeable windows with scrollable list of text strings, optionally sortable. List can be scrolled with a scrollbar, up and down arrows, arrow keys, or a SHIFT-key combination which searches for first occurrence of the specified key. Source and sample program included. NewEx Assembly program to replace icon, iconX and similar utilities. Unique in that it uses a WorkBench "Tool" icon instead of a "Project" icon. This allows workbench startup of programs that could ordinarily only be started by the CLI. V1.1, includes assembly source.

PopMenu Set of functions for setting up, drawing, and handling of pop-up menus affixed to windows. Clicking on menu box area will open up full menu, list of menu items inside. Source and sample program included.

SuperMenu Information display system to quickly and easily display text files (and sections of text files) with press of a button. Version 2.0, shareware, binary only. SynInfo Reports interesting information about configuration of your machine, including some speed comparisons with other configurations, versions of OS software, etc. V1.4, binary only.

Today Implementation of IBM PL/1 history program. Tells important events and birthdays on current or specified day. CLI options include once-per-day setting for startup sequences. V0.91, binary only, shareware.

DISK 369 AQAData Information to aid users in updating Aquarium V1.12 database. Includes information on disks up to number 360.

Rip Another screen hack. Run it and see what happens. Binary only.

Fortune Randomly display a "fortune" selected from a fortunes file (supplied), by text or voice. New version will work from Workbench or CLI. V2.04g, update to version on disk #311, source included.

Spy Tracks calls to AmigaDOS and Exec functions, reporting them to the screen, along with their calling parameters and the results. V1.0, includes source.

VAXterm VT220 terminal emulator that is close to real VT220 terminal in both supported facilities and user interface. Designed primarily for connection to VAX/VMS, it should work with any host computer with VT220 terminal support. Supports file transferring for ASCII files by means of DCI commands. V2.4, includes source.

XprTransmit Cli-based command to easily access any Xpr Library without having to worry about call-back-function etc. Can access every "serial device"-like exec-device. Only little documentation. V1.0, binary only.

DISK 370 Skah A ksh-like shell. Features include command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, IO redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. V1.5, update to V1.4 on disk 342. New features include user definable keymaps, an ARexx port, many new internal

and external commands, selective disabling of wildcards, preparing of script files, bug fixes, and more.

DISK 371 Fractals Fractal generator that generates many different types of fractals based on iteration of complex-valued formulas. Can generate Mandelbrot and Julia sets, as well as the sets of more unusual formulas such as lambda-COS(Z) and Newton-R. V2.1, includes source and some sample creations.

LockDevice To protect filing devices from being accidentally formatted. Can be used with any filing device and file system. V1.0, includes source.

Port2 Sample C program showing how to control a mouse connected to second mouse/joystick port. Executable creates second mouse pointer controlled by a mouse plugged into port 2. V1.0, includes source.

PPLib Shared, runtime library to aid in development of programs that need to crunch files crunched with PowerPacker. V34.1 (release 1.1), binary only.

PPMore "More" replacement program that reads normal ascii text files as well as files crunched with PowerPacker. Crunched files can result in big disk space savings. V1.7, update to version on disk 334, binary only.

PPShow "Show" program for normal IFF ILBM files or ILBM files crunched with PowerPacker. Decrunching is done automatically as file is read. V1.2, update to version on disk 334, binary only.

PPType "Print" program that will print normal ascii files or files crunched with PowerPacker. Nice features such as page headers and numbers, adjustable tab sizes, page info from preferences. V1.1, binary only.

DISK 372 Magnetic Pages To create and display a disk-based magazine. Similar format to that of a traditional paper magazine. Combine text and graphics on single page, branch to different sections by clicking on icons and play sound and music. Full intuition driven interface. V1.0, shareware, binary only.

PLW Phone-Line-Watcher. For users of Hayes compatible modems. Monitors serial port and records all incoming calls. Allows remote user to login, receive and leave message, and transfer files via Zmodem in either direction. Two level DOS access. Disabled DOS-requestors. Greatly enhanced version of initial release on disk 363. V2.8, binary only.

RemapIcon Utility to remap icons to be exchanged between Kickstart 2.0 and Kickstart 1.2/1.3 Workbench environments. The icon images are remapped to reflect different colour palette used by Workbench releases. V1.0, includes source.

DISK 373 Multiplot Intuitive data plotting program featuring flexible input options, arbitrary text addition, automatic scaling, zoom and slide with dipping at boundaries, range of output file formats and publication quality printed output. Workbench printers supported via transparent use of PLT: device. V XLNc, update to version on disk 333. Includes many new features, nicer user interface, and low memory options allowing it to be used in half megabyte machines. Includes source.

DISK 374 IPDevice Pipes for Power People. Pipe-like DOS device that passes data immediately rather than waiting until buffer is full. Also allows multiple writers to a single channel, maintained connections, and piped connections to a Shell. Binary only.

Mat Comprehensive String-Search/Pattern-Match Utility for both text files and directories. Powerful command line syntax allows automatic file editing, construction of command scripts, and so on. Example Shell scripts are included. Binary only (much enhanced version of original on disk 102).

PopArt Intuition based image data generator and animator. Includes source.

SoftSpan Soft Span BBS program. Intuitive, command-line based menu system with message bases, uploads, downloads, file credit system, extensive help system, etc. V1.1, update to that on disk 343, includes bug fixes and some enhancements. Binary only.

DISK 375 BI Brush to C code image converter. V1.3, update to V1.0 on disk 184. Contains bug fixes and support for AmigaBasic. Binary only.

CardMaker Programmer's aid for creating card image data that can be used in any card game that uses standard 52 card deck. V2.1, update to V1.0 on disk 184. Bug fixes and support for AmigaBasic. Binary only.

ParM Parameterable Menu. Build menus to run programs in either CLI or WorkBench environment. ParM can have its own little window, or attach menu to CLI window you are running it from. V1.1, includes source. TextPlus Word processor for Amiga, with both German and English versions. Write letters, books, programs etc. in a very easy and comfortable way. V2.2, update to V2.0 on disk 359. Now includes full source.

DISK 376 AztecArp Arp package fixed to work with 5.0 release of Aztec 'C' compiler. Original Manx support files were in-

complete, contained bugs, and had wrong linker format. Update to version on disk 353, fixing couple of bugs and adding some new useful features. Includes source. **Matrix** Solves systems of linear equations. Includes both PAL and NTSC versions. V.1.00, includes source. **Plotter** Two-dimensional mathematical function plotting program. Includes both PAL and NTSC versions. V.3.71, includes source.

ToolLibrary Shared library for the Amiga. Contains some mathematical (evaluation of strings) and intuition (menus, requester) functions. V.2.06, includes source.

DISK 377

AnsiRead2 Bridges gap between IBM and Amiga ANSI by displaying IBM ANSI text and graphic animations (as usually captured from bulletin boards) in their full intended colors and motion. Several samples. V.0.2, binary only, shareware.

Formater Disk formatting program with intuition interface which supports write verification, disk installation, fast formatting and automatic start. Formats 3.5" disk in a multitasking environment in about 1:36 minutes (with verify turned on). V.2.4a, includes source.

Icon2C Simple tool to turn any Workbench icon file into 'C' sourcecode, similar to program of same name on disk 56. This version has arp interface and offers support for Kickstart 2.0 icons. V.1.2, includes source.

IEE Icon editor which can create and modify icons up to 640x200 pixels in size (also dual render). Can set stack size, position of icon (also free-floating), default tool, 10 tool types and control over opened window. Can also generate C source code behind icon for program inclusion. Now reads/writes IFF files and handles 4 or 8 colour icons. V.2.0, update to version on disk 342, source available from author.

IntuitionEd Intuition based utility that creates C source code for screen, window, border and text structures. Can also write code for several functions required for opening and closing of these structures. Code can then be compiled by either Manx and Lattice. Shareware donation to author will receive enhanced version capable of writing gadget structures as well. V.1.0, binary only, several samples included.

PowerLOGO Experimental programming language based on Lisp and LOGO. Versatile, highly interactive, organizes programs as collections of procedures, includes lists as first-class data objects. V.1.00, binary only.

DISK 378

Adapt CLI utility that converts special German characters in files imported from MS-DOS systems into right Amiga codes. Can easily be changed to work with other languages. V.2.2, includes source.

ANSIMaster ANSI editor that provides full IBM font set and color capability. Very useful for design of custom ANSI screens/graphics for telecommunications. V.1.0, binary only.

DevRen A Device RENamer, originally designed to allow renaming of external drive on A2000 (always recognized as DF2) to be DF1. However, works with any mounted device such as RAD: RAM: RAW: CON: etc, as long as original and renamed version have same character length. V.1.5, includes source.

JoyLib Both linktime version and shared library of joystick routines featuring a technique which proves to be extremely fast on 68010 or higher processors, and still faster than most of other routines on standard processors. Includes source for library in Assembler and demonstration program in C.

MacHill A "mouse accelerator" program that also includes hotkeys, features of sun mouse, clicktofront, popdi, file bar dock with bbs online charge accumulator, Arxex support and much more. V.3.0, update to version 2.6 on disk 254. Binary only.

MuchMore Like "more", "less", "pg", etc. Uses its own screen to show text using slow scroll. Includes built-in help, commands to search for text, and commands to print text. Works with PAL or NTSC, in normal or over-scan modes. Supports 4 color text in bold, italic, underlined, or inverse fonts. V.2.7, update to V.2.5 from disk 253. Includes source in Oberon and assembly code.

MuchMorePoPa Extended version of MuchMore V2.7. Displays texts that have been packed with PowerPacker. V.2.7, ind source in Oberon and assembly code.

Observer Working example for a Lattice LSR-program. Opens window and displays volume names of all inserted disks (DF0: through DF3:). Inc source in Lattice C. **TheGuru** Program to bring the Guru back into Kickstart 2.0, for those who will miss it. V.1.0, binary only.

DISK 379

Append CLI utility to directly append one or more files to another without having to use roundabout methods necessary with AmigaDOS "join" command. V.1.0, includes source.

FileEncrypt Another intuition based file encryptor to enable you to scramble your highly secret, hard earned source code and prevent your co-workers from taking credit for it. Includes (unscrambled) source.

LLSort Replacement for AmigaDOS SORT command. Pure bit set and may be made resident. Features COL-START and FIELDS parameters and sorts in either ascending/descending order. Also sorts with or without

case sensitivity. Binary only.

TheA64Package Comprehensive emulator/utility package to assist Commodore 64 users in upgrading to Amiga. According to author, this package compares to or surpasses commercially available packages of same nature. Many of the utilities require a hardware interface that allow Amiga to access C64 peripherals such as disk drives and printers. Hardware interface is free with a shareware donation to author. V.1.00, binary only. **Xnum** Useful CLI conversion utility that takes a decimal, binary, octal or hex number as input and displays the number in all four formats. Binary only.

Yawn! Small Workbench sliding block puzzle to keep your mind and fingers busy while your compiler is busy crunching away on your highly secret, hard earned source code. Selectable size from 4x4 to 7x7 and European, Hindi or Arabic numerals. Includes source.

DISK 380

Oberon Freely distributable demo version of powerful Oberon compiler. Oberon is a modern, object oriented language developed by Prof. Dr. Niklaus Wirth of ETH Zurich as a successor to Modula-2. This single pass compiler creates standard Amiga object files, uses large variety of optimizations to create fast code, supports writing of reentrant programs, allows you to call code from other languages like C and Assembler, etc. Includes compiler, editor, link utility, program to display compilation errors and some demo programs. V.1.16, binary only.

DISK 381

SKsh A ksh-like shell. Includes command substitution, shell functions with parameters, aliases, local variables, local functions, local aliases, powerful control structures and tests, emacs style line editing and history functions, I/O redirection, pipes, large variety of built-in commands, Unix style wildcards, Unix style filename conventions, filename completion, and coexistence with scripts from other shells. Very well documented. V.1.6, update to version 1.5 on disk 370. Several important bug fixes and a few minor new features such as command line cut and paste. Binary only.

DISK 382

CrossDOS A "tryware" version of a mountable MS-DOS file system for Amiga. Read and write MS-DOS/PC-DOS and Atari ST formatted disks (V.2.0 or higher) directly from AmigaDOS. "Readonly" version, which does not allow any writes to disk. Fully functional version is available for very reasonable price from CON-SULTRON. V.4.00b, update to V.3.05b on disk 252. Binary only.

Msh Amiga file system handler that handles MS-DOS formatted diskettes. V.1.30 (Release 1 patch 3). You can use files on such disks in almost exactly the same way as you use files on native AmigaDOS disks. Fully functional, read/write version, that supports 8, 9, or 10 sector disks of 80 tracks, and should also work on 40 track drives and hard disks with 12 or 16 bit FAT of any dimension FAT allows. Update to version "1.5" (Release 1) on disk 327. Includes source.

DISK 383

LHarc Archive program like Arc and Zoo, with a heavy emphasis maximum compression for minimum archive size, using LZHUF compression. V.1.21, update to version 1.10 on disk 312. Binary only.

LibraryKiller Small utility to remove libraries that aren't used any more. V.1.0, includes source in assembly.

MandelMountains Renders three-dimensional images of blowups of Mandelbrot set. Several example images. V.2.1, update to V.2.0 on disk 354. Most significant enhancement for this version is that it is two to three times faster due to inclusion of specially tuned fixed point arithmetic package. Shareware, binary only.

Procy Intuition based disk copier for AmigaDOS disks featuring high speed diskcopy with write verify, data recovery from damaged tracks, full multitasking compatibility, and user friendly interface. V.2.11, update to V.2.0 on disk 243, with new data recovery routines and some minor bug fixes. Binary only.

DISK 384

Contact Demo version of "pop-up" program for managing personal contacts. Keeps a name and address list along with phone numbers and comments. Can print mailing labels with a couple of mouse clicks (supports PostScript printers). Names and address can be "dipped" into other programs such as word processors, and it can even dial your modem. V.1.0, binary only.

Elements Very nice interactive display of Periodic Table of Elements. Includes general row and column information, plus test mode where program asks specific questions about selected element or row/column. V.2.3, update to V.2.0 on disk 368. Binary only, shareware.

NorthC Freely redistributable programming package containing all the programs required for developing in C. Based on Sozobon Ltd C compiler, Charlie Gibb's assembler, Software Distillery's linker, and portions from other sources. Steve has pulled everything together and added some enhancements in process. V.1.2, update to V.1.1 on disk 353. Changes include extra examples, many bug fixes, further documentation and some

improvements. Environment is supplied compressed and unpacks to two disks. Partial source is included.

DISK 385

MortCalc Yet another loan calculator, but this one was written with accuracy in mind. Monthly payments times number of months should balance total principal plus interest, to the cent. V.2.5, freeware, source included.

XLispStat Statistical program based on XLisp. Does some of the most advanced dynamic statistical graphics, including brushing, linking, and 3D rotations. Menus and requestors can be created dynamically with simple lisp commands, and treated as lisp objects, so that the program could be used for many other non-statistical purposes, such as interactive expert systems. Has Arxex port so that editor may be used to prepare lisp programs and send them directly to XLisp-Stat to be executed. Commands, as character strings, may also be sent from XLisp-Stat with the lisp command, "arxex". All graphics produced may be saved to files in IFF format. This version of XLisp-Stat (v.2.1, release 1) has been ported to Amiga by James Lindsey, from Mac version supplied by Luke Tierney. Requires a numerical coprocessor (M68881/M68882) and an M68020/M68030 processor. This disk contains the executables, manual, and lisp files. The sources can be found on disk 386.

DISK 386

Statpack Demo version of statistics and data manipulation program. V.3.2, binary only. **XLispStat** Statistical program based on David Betz' XLisp. For description see disk 385. This disk contains the sources. The executables, manual, and lisp files can be found on disk 385.

DISK 387

BlitterSand Interesting cellular automata program that gets its roots from a "sandpile". Intriguing to watch. Includes assembly source.

ExtFuncProc External Function Process. Allows execution of any library function from simple tasks even if these functions require a process environment. For experienced programmers only because there isn't any documentation written yet but only an example. Used by GMC. Runs under KS 2.0. Binary only.

GMC Console handler with command line editing and function key support. Provides extended command line editing, function key assignment in four levels, extended command line history, online help for functions in the handler, and iconify function. V.9.2, update to V.4.0 on disk 291, with many new features, including output buffer (dump to printer and window), filename completer, script function, undo function, prompt beeper, pathname in window title, etc. Shareware, binary only.

H2I Translates C include files into assembler include files. Useful for programmers that use both C and assembler code in same program. Helps keep structure definitions consistent. V.1.1, shareware, binary only.

MandAnim Mandelbrot Animation program to easily generate series of 16-color pictures. Full mouse and/or keyboard operation, zooms, auto-save, high (cheat) speed, iconization, etc. The generated pictures all remember their positions and settings so they can be re-loaded. V.1.1, binary only.

MandelBlitz Very fast Mandelbrot plotter with lots of handy functions such as color cycling, zoom, special palette control, file requestors. V.1.0, binary only.

Menu Fast-access menu system configurable via script file to run selected programs. V.2.0, binary only.

NTSC-PAL Two programs that give A500/A2000 owners with new ECS 1Mb Agnus installed ability to boot into either NTSC or PAL environment. "Very" useful for NTSC and PAL owners. V.1.1, ind assembly source. **Wreq** Replace "pop-up" requestors with line-oriented requestors (similar to those found in MS-DOS environment) that can be easily handled from keyboard. If there is no interactive console for process, requester won't appear. Includes assembly source.

DISK 388

Calc Shell style, command-line calculator. Does not have fancy keypad display as many other calculators do. Instead, it is capable of taking its input from file, keyboard, or command line and outputting its results to file or screen. Can also apply single equation to all values stored in a file (or files). Handles all common mathematical expressions, can optionally predefine physical constants and store variables. V.2.0, binary only.

DClock "Dumb Clock" utility that displays date and time in Workbench screen title bar. V.1.27, update V.1.12 disk 325. Many more useful enhancements/bug fixes, including Arxex interface. Includes source.

DIED Full-screen ANSI editor including animation utility. Provides PAL and NTSC compatibility. Many useful features such as horizontal and vertical block outpasting operations, line/block/screen centering, save defaults and more. V.2.4, binary only.

Free Display how much free space (bytes or blocks) you have on any or all of your mounted disk volumes. Runs from CLI only. Based on "Free" disk 66, but totally rewritten and enhanced. V.1.01, includes source.

KeyMapEd To change KeyMaps used with SetMap. Full featured editor providing support for normal, string and dead keys. Keyboard represented is from A3000

A2000/A500 but it is fully compatible with A1000 keyboards. V.1.11, update to V.1.02 on disk 193, binary only. **SnoopDoe** Utility for monitoring AmigaDOS calls. Allows you to see what libraries, devices, fonts, environment variables or startup files a program is looking for. Very useful when trying to install new application. V.1.0, includes source in C.

DISK 389

Kick Another screen hack, specifically for A500/A2000 owners. I don't want to spoil any surprises but reportedly causes some machines to crash. Binary only.

Plot 3-D function plotting program with provisions for coordinate translation on both axes, parametric equations, and standardized notation of the pow function (x^y - which now works as specified.). V.5.1, update to V.4.1 on disk 175, with some enhancements and bug fixes. Binary only.

PolySys Extended version of 0L-system (string rewriting) described in The Science of Fractal Images. Basic algorithm has been expanded and modified extensively, and looping commands similar to those found in other Turtle graphics systems (Logo, etc) have been added. Support for three-dimensional drawing, with perspective, included. V.1.0, binary only.

Retab Useful command-line "tab-to-space" and "space-to-tab" expansion utility. Several command-line options to specify size/settings and ability to protect material enclosed by delimiters (quotes, brackets, carats, etc.) from expansion. V.1.03, binary only.

ZPlot Graphs formulas based on 4-D complex number planes. Currently supports Mandelbrot set, Julia sets, and Phoenix curves, with over 500 mapping variations. Math functions supported include sin(z), sinh(z), z^z, e^z, z^n, sqrt(z), cos(z), cosh(z), tan(z), tanh(z), log(z), ln(z) and n^z. V.1.3d, binary only.

DISK 390

Rip Quickly and easily switch between various screens. Close screens, pull them up, and activate windows. Has unique feature of sorting screens in a way that all titles bars are visible at one time. V.2.0, binary only.

ReadMeMaster Nifty title database for finding those programs that you know exist somewhere (???!) in the AmigaLibDisk library. Maintains keyword dictionary of Contents descriptions that allows searching by disk number, program title, author's name, or some other descriptive word. Currently supports disks 1-360, update to the version on disk 163. Binary only.

SetClock Utility to set or read hardware clock on Spirit Technology memory expansion board. Works in manner similar to SetClock utility supplied by Commodore with Amigas that have hardware clocks as standard equipment. Inc source in PCOPascal and assembler.

SM Small utility to center display. Recoded version of "ScreenShift" (Disk 88), only half size. Includes source.

DISK 391

Curves Link library containing many of terminal independent standard "curves" functions. For porting into screen based programs to Amiga. V.1.10, binary only. **Eco** ECHO replacement which allows many escape sequences for colors, text styles, cursor positioning, system variables, and much more. Has PURE bit set and can be made resident. V.3.40, includes source.

FractalLab Investigate the realm of fractals and allow your imagination to run wild. Virtually unlimited number of these self-similar curves can be created with FractalLab. Several interesting samples. V.1.0, binary only. **ListPlot** 2D plotting program built around PLOT plotting library. Principle advantage is that it supports a variety of graphics devices. By default, output is sent to a window on Amiga's screen. Through command line options, graph can be sent to any preferences printer with graphics capability, stored as IFF file, stored in HPGL format, stored in Agdis Draw format, or stored as Encapsulated Postscript file. Variety of line styles and colors are available. Includes source.

DISK 392

BTNTape "Better Than Nothing" SCSI tape device handler. Provides flat file access to SCSI tape drive from application programs using simple DOS calls to Read() and Write(). Can also be used with Amiga TAR utility for disk backups. Files may span multiple tape volumes and may start at any tape block. Requires "SCSI-direct" compatible hard disk driver. V.1.0, includes source.

CPLOT Graphs linear functions in two dimensions, similar to Mandelbrot plot. You start with a linear function like 10sin(x^2-y^2) and CPLOT treats each point on the screen as an X-Y coordinate, color-scaling it according to its magnitude for preset range of inputs. Includes some very nice sample creations. V.1.0, binary only.

Pmode Very simple command line utility to send escape sequences to printer to change print styles. Specifically tested NEC P6 Plus, but should work with many printers. Included source should make it easy to add/modify escape sequences.

SetNoClick Very simple program to set NOCLICK flag in public section of trackdisk unit. Only works with V36 and up of trackdisk device. Includes source.

Spades Amigaized version of popular card game. Single player version, and computer plays your partner and also two opponents. V.1.1, includes source.

Fish Disks 200-400

DISK 383

FileO Dissidents file requester. V 1.9, update to V1.6 on disk 348. Binary only.

FontConvert Printer font conversion to convert standard Amiga fonts into form suitable for downloading to printer that supports user defined printer fonts. V1.0, includes source.

FuncLib To add or remove rexx function libraries. ILBMLib Shared library (ilbm.library) to read/write IFF files, derived from EA IFF code, along with enhancements. V0.3, partial update to version on disk 348.

LibTool To develop C or assembly code, and then quickly turn it into a shared library. Also generates all support files for library including Pragma files (both Manx and Lattice), bmap files, include files, C interface glue files. Can be used to make a device, too.

PrintSpool Small print spooling shared library that provides easy way to print graphics and text for any application. Can print ascii text of any length or dump any part or all of a raster. Takes care of opening printer device and manages its own resources. V 0.1, binary only, with source code examples.

RexxIntuition ARexx function library that allows you to open windows/screens from an ARexx script, attach menus, gadgets, (file) requesters, load and save ILBM picture files, auto-requesters, print text and graphic dumps, and completely interact with user in intuition environment. Adds all Amiga features that ARexx lacks.

RexxLib Shared library that can be easily used by any C or assembly programmer to add ARexx interface to programs. Handles all messy details including message creation/deletion and error handling.

DISK 394

Aniptr33 Some more animated pointers to choose from to "live" up your display environment. Other pointers are on disks 332 and 364. Binary only.

*Liner Shareware outline to create outlines for notes or export to other programs. Can save an outline as ASCII text, and is clipboard compatible. Enhancements over previous version include support for ARexx, Workbench, overscanned screens, more than one line of text per outline number, preferences file, search/replace. V 2.00, upgrade to V 1.32 on disk 285. Includes C source. Pics Miscellaneous pictures with "cartoon" theme.

PrintImage Simple program that provides an easy way to print IFF ILBM images. V 1.0, includes source.

DISK 395

DragonCave Nicely done Sokoban like game. Sound effects, two or three dimensional graphics, 100 levels (50 of which can be customized with the built-in editor), undo of up to 1000 preceding steps, transparent copying of data files to ram: for reduced load times, both English and German versions, etc. V1.00, binary only.

DISK 396

ColorCatch Utility that lets you grab colors from a screen and save them as an executable file. V 1.0, includes source in assembler.

NewLook Changes system gadgets in all screens and windows. V 1.0, includes source in assembler.

PBar Editor to change pattern in windows drag bar and save pattern as an executable file with an icon looking like the pattern. V 1.0, includes source in assembler.

PCalendar Little calendar program lets you look through years and months using arrow-keys. V 1.0, includes source in assembler.

PClock Little clock program which shows time and available CHIP and FAST memory. V 1.0, includes source in assembler.

PFiler Very good and small file requester to link onto your own programs. V1.0, ind source in assembler.

Resident Resident startup module for Aztec C. V 1.0, includes source.

RoadRoute Trip planner program to find "best road route" between any two points of travel. Features include user customization of CITIES and ROADS files to suit travel interests and provision for very large city menus and itineraries. Also includes RoadScan, a checker for RoadRoute files (CITIES and ROADS). Very large files may contain goofs (cities with no roads, same road entered twice, etc.), or oddities (direct road not as fast as multipoint). These are pointed out. V 1.6, update to V1.5 on disk 358, includes source.

TurboTopaz Two Text speed up programs like Fast-Fonts. Allows replacement of Topaz-80 font from both CLI and WorkBench. Includes program to measure to speed of Text speed up programs. V 1.0, includes source in assembler.

DISK 397

DKBTrace Complete ray tracer that supports arbitrary quadric surfaces (spheres, ellipsoids, cones, cylinders, planes, etc.), constructive solid geometry, and various shading models (reflection, refraction, marble, wood, and many others). Also has special case code to handle spheres, planes, triangles, and smooth triangles. By using these special primitives, rendering can be done much more quickly than by using more general quadrics. V 2.0, includes source in C.

DISK 398

DClock "Dumb Clock" utility that displays date and time in Workbench screen title bar. ARexx interface. V1.29, update to V1.27 on disk 388. Includes source.

Formatter Faster and more user friendly floppy disk formatter that is also an example of how to format Amiga file systems in general and get AmigaDOS to accept them. Formatting without verify takes about 50 seconds, with verify takes about 100 secs. V2.7, includes source.

GMC Console handler with command line editing and function key support. Provides extended command line editing, function key assignment in four levels, extended command line history, online help for functions in handler, and iconify function. Also output buffer (dump to printer and window), filename completer, script function, undo function, prompt beeper, pathname in window title, close gadget for KS 2.0, etc. V 9.6, update to V 9.2 on disk 387. Shareware, binary only.

HunkFunk To "disassemble" any given AmigaDOS hunk file, includes executables, linker libraries, linker object files, overlayed files, etc. Written as exercise by the author to learn a few things about AmigaDOS hunk structures. Includes source.

KeyMacro Keyboard macro program, configurable via a text file, that also supports hotkey program execution. You can map up to eight functions to each key, including keys such as cursor keys, return key, etc. V 1.6, update to V1.4 on disk 354. Includes source.

DISK 399

AutoCLI "PopCLI" type replacement that works with WorkBench 2.0. Also fixes problem with PopCLI crashing the machine if used on PAL Amiga to open CLI window with vertical size greater than 200 lines. Other features

include optional Function-key press with qualifier to execute an S-script file. V 1.6, binary only.

CCLib Implementation of standard C runtime library, with a few extra goodies. Supports large number of functions including stream I/O, low-level I/O, string, memory, linked list, sorting, time, process control and more. V 3.0, includes source and some utility programs.

PrettyWindows Three different C routines to add various borders inside windows. Ind source and demo.

TrackDisplay Simple program that continuously monitors and displays current track for each floppy disk. Includes source.

DISK 400

DriveWars Shareware shoot'em up game that pits you, dfo: or dfl: against a computer virus that is about to destroy all US records of Iraq's positions during operation Desert Shield. In V1.0, you must fly dfo: through computers and destroy all contaminated chips and disks.

ParNet Software Distillery's NET: file system using Matt Dillon's parallel port code. Using a special DB25 cable, two Amigas can be connected via parallel port. One Amiga can mount the other as a device and read/write files as if they were local. V 2.4, binary only.

ReqLib Runtime, reentrant library designed to make it easier for programmers to use powerful, easy to use requesters, for communicating with users. Includes color requester, file requester, message display requester and many functions to make creation of gadgets for your own custom requesters easier. Binary only.

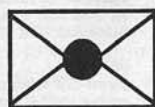
SetCPU Designed to allow user to detect and modify various parameters related to 32 bit CPUs. Includes commands to enable or disable text/data caches, switch on or off 030 burst cache line fill request, use MMU to run ROM image from 32-bit memory, and to report various parameters when called from a script. V 1.60, update to V 1.5 on disk 223. Includes source.

SF2 File search utility. Default searching starts from root directory of specified device and descends down into its subdirectories. Searching includes looking into archive files generated by various compression utilities. Archive files ending with a .ARC, .LHZ, .ZIP and .ZOO are currently supported. Lots of CL options. Requires ARP 1.3 (rev. 39.1). V2.0, binary only, shareware.

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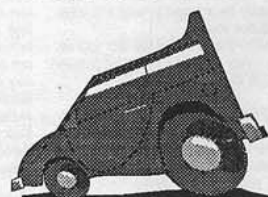
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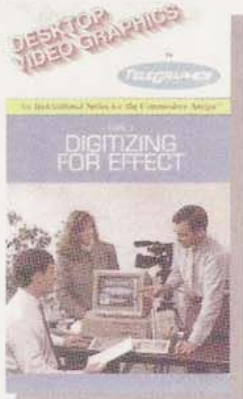
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